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S. D. Kimbark Co.

S. D. KIMBARK'S

Illustrated Catalogue.

of heavy hardware &c.

80, 82 & 84 MICHIGAN AVE.

CHICAGO.

CHICAGO:
KNIGHT & LEONARD, PRINTERS.
1876.

TS245
K44
1876

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Having spared neither time, labor nor expense in compiling and publishing this Illustrated Catalogue, we trust it will be found a valuable, if not an indispensable, hand-book for the Iron, Steel, Heavy Hardware, Carriage and Wagon Hardware trades.

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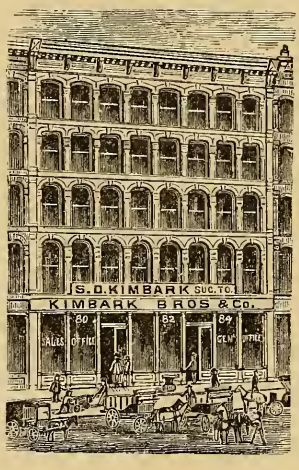

S. D. KIMBARK SUC. TO
KIMBARK BROS & Co.
80
SALES OFFICE
82
84
CLK'S OFFICE

IRON.

Ordinary sizes, Flat, 1½ to 4 in. wide by ⅜ to 1 in. thick. Ordinary sizes, Rounds and Squares, 1 to 2 in. diameter. All *extras* named on the list must be added to the *rate* for ordinary sizes.

"Best" 1 cent per pound above Refined.
"Best Best," 1½ " " " "

Classification, Adopted March 15, 1876.

FLAT BAR.

SIZES.					RATE REFINED.
1½ to 4 in.	wide by	⅜ to 1 in.	thick		
4¼ " 6	"	⅜ " 1	"	advance	$\frac{1}{10}$
1¾ " 6	"	1⅛ " 1½	"	"	$\frac{4}{10}$
6¼ " 8	"	⅜ " 1	"	"	$\frac{7}{10}$
1¼ " 1⅜	"	⅜ " ¾	"	"	$\frac{1}{10}$
1 " 1⅛	"	⅜ " ¾	"	"	$\frac{2}{10}$
⅝, ¾ and ⅞	"	⅜ " ⅝	"	"	$\frac{4}{10}$
2 to 3½	"	1¾ " 2	"	"	$\frac{5}{10}$
7 " 8	"	⅜ " 1½	"	"	$\frac{7}{10}$
4 " 8	"	1¾ " 2	"	"	1

HEAVY BANDS.

3½ to 6 in.	wide by	¼ and $\frac{5}{16}$	in. thick	advance	$\frac{2}{10}$
6¼ " 8	"	¼ " $\frac{5}{16}$	"	"	1
1½ " 3¼	"	¼ " $\frac{5}{16}$	"	"	$\frac{2}{10}$
1 " 1⅜	"	¼ " $\frac{5}{16}$	"	"	$\frac{3}{10}$
¾ " ⅞	"	¼ " $\frac{5}{16}$	"	"	$\frac{5}{10}$
½ and ⅝	"	¼ " $\frac{5}{16}$	"	"	1

LIGHT BANDS.

3 to 6 in.	wide by	⅛ to $\frac{3}{16}$	in. thick	advance	$\frac{2}{10}$
3 " 6	"	Nos. 11 and 12	thick	"	$\frac{5}{10}$
6¼ " 8	"	" 12 to $\frac{3}{16}$	thick	"	$1\frac{5}{10}$
1½ " 2¾	"	⅛ to $\frac{3}{16}$	in. thick	"	$\frac{5}{10}$
1½ " 2¾	"	Nos. 11 and 12	thick	"	$\frac{7}{10}$
1 " 1⅜	"	⅛ to $\frac{3}{16}$	in. thick	"	$\frac{7}{10}$
1 " 1⅜	"	Nos. 11 and 12	thick	"	$\frac{9}{10}$
¾ and ⅞	"	⅛ to $\frac{3}{16}$	in. thick	"	1
¾ " ⅞	"	Nos. 11 and 12	thick	"	$1\frac{2}{10}$
½ " ⅝	"	⅛ to $\frac{3}{16}$	in. thick	"	$1\frac{5}{10}$
½ " ⅝	"	Nos. 11 and 12	thick	"	$1\frac{7}{10}$
⅜	"	$\frac{3}{16}$	in. thick	"	$3\frac{4}{10}$

WAGON BOX.

¾ and ⅞ in. wide, bevel edge ..... advance $1\frac{5}{10}$

TONGUE CAP.

1¾, 2 and 2¼ in. wide ..... advance 1

IRON.

Classification, Adopted March 15, 1876.

HOOPS.

SIZES.	RATE REFINED.
2¼ to 3 in. wide	advance 1
3⅛ " 4¾ "	" 1
1⅞ " 2 "	" 1
1⅜ " 1¾ "	" $1\frac{2}{10}$
1⅛ " 1¼ "	" $1\frac{4}{10}$
1 in. wide to No. 20 Gauge	" $1\frac{6}{10}$
1 " finer than No. 20 Gauge	" $1\frac{8}{10}$
⅞ " to No. 21 Gauge	" $2\frac{1}{10}$
⅞ " finer than No. 21 Gauge	" $2\frac{3}{10}$
¾ " to No. 21 Gauge	" $2\frac{6}{10}$
¾ " finer than No. 21 Gauge	" $2\frac{8}{10}$
⅝ "	" $3\frac{1}{10}$
½ "	" 4
For each gauge lighter than above indicated	" $\frac{1}{10}$

CUT HOOPS.

2 Strips 1¾ in. wide, No. 18, 68 in. long	advance $1\frac{5}{10}$
2 " 1½ " No. 19, 72 "	" $1\frac{5}{10}$
2 " 1½ " No. 19, 76 "	" $1\frac{5}{10}$

Above comprises one set of six pieces.

FEATHERED EDGE HOOP.

1⅛ in. wide	advance 1
1 "	" $1\frac{3}{10}$
⅞ "	" $1\frac{5}{10}$
¾ "	" 2
⅝ "	" $2\frac{5}{10}$
½ "	" 3

The Feathered Edge Hoop is equal in every respect to first quality Hoop, excepting the edges being rough and the production of it very limited.

RIVET ROD.

⅜ × $\frac{3}{16}$ in., made of Juniata Iron ..... per pound.

LIGHTNING ROD.

Star	advance 2
Fluted	" 2

IRON.

Classification, Adopted March 15, 1876.

ROUNDS AND SQUARES.

SIZES.				RATE REFINED.	
1	to 2 in.	diameter			
2 1/8	" 2 5/8	"	advance		1/10
2 3/4	" 3 1/4	"	"		3/10
3 3/8	" 4	"	"		6/10
4 1/4	" 5	"	"		1 3/10
3/4	" 7/8	"	"		1/10
9/16	" 5/8	"	"		2/10
7/16	" 1/2	"	"		4/10
3/8		"	"		6/10
5/16		"	"		8/10
1/4		"	"		1
3/16		"	Common	"	3
3/16		"	Extra Quality Drawn Rod	"	4

OVAL.

7/8	to 2 in.	wide	advance		4/10
5/8	" 3/4	"	"		6/10
1/2		"	"		8/10
3/8		"	"		1 2/10

HALF OVAL AND HALF ROUND.

7/8	to 2 in.	wide	advance		7/10
5/8	" 3/4	"	"		1 2/10
1/2		"	"		1 5/10
3/8		"	"		3

HORSE SHOE.

5/8	to 1 1/4	in. wide by 5/16 to 7/8 in. thick,	Common	"	1
5/8	" 1 1/4	" " 5/16 " 7/8 "	Extra Quality	"	2

EXTRA FOR CUTTING TO LENGTH.

Flat Bars, Round and Square	advance		1/10
Heavy Band	"		1/10
Light Band and Wagon Box	"		2/10
Hoops	"		3/10
2 to 3 in. Round and Squares over 20 ft. long	"		2/10
3 1/4 " 4 " " " 18 "	"		2/10
Large Flats, over 22 ft. long	"		2/10

No charge for cutting Tire.

IRON.

Classification, Adopted March 15, 1876.

UNION SHAFTING—EXTRA QUALITY.

ROUNDS AND SQUARES, STRAIGHTENED, WITH SAWED ENDS.

SIZES.				ADVANCE ABOVE REFINED.
2 1/8	to 2 7/8	in.	diameter	advance 6/10
3	" 3 1/2	"		" 8/10
3 5/8	" 4	"		" 1 3/10
4 1/8	" 4 1/2	"		" 1 6/10
4 5/8	" 5	"		" 2
5 1/4	" 5 1/2	"		" 2 3/10
5 3/4	" 6	"		" 2 8/10
6 1/4	" 6 1/2	"		" 3 3/10
6 3/4	" 7	"		" 3 8/10

No Squares larger than 4 in.

EXTRAS FOR CUTTING UNION SHAFTING TO LENGTH.

Rounds and Squares to 2 in. diameter and Flat Bars	1/10
And additional for every 10 ft. longer than 20 ft.	1/10
Rounds and Squares, 2 in. to 4 in. diameter, up to 18 ft.	3/10
Rounds over 4 in. diameter	5/10
For each additional foot over 18 ft.	1/10

COAL SCREEN.

1 3/4 × 5/8 × 5/16	advance	5/10
1 × 5/8 × 5/16	"	1

PLOW BEAM.

Plow Beam	advance 5/10

LANDSIDE.

Landside	advance 7/10

GUARD.

7/8 × 3/4 × 5/8 and 7/8 × 5/8 × 5/8	advance	3
3/4 × 5/8 × 9/16 " 7/8 × 5/8 × 1/2	"	3 5/10

IRON.

NORWAY AND SWEDES.

Classification.

ORIGINAL BAR.

1½ to 5 in. wide by ⅜ to 1 in. thick		per pound.
¾ " 2 round and square		"
2¼ " 3 square	advance ½ cent	"

FLAT BAR, RE-ROLLED.

1 to 1¼ in. wide by ⅜ to ⅝ in. thick	advance	½	cent	per	pound.
¾ " ⅞ " ⅜ " ⅝ "	"	1	"	"	
⅝ " ⅜ " ½ "	"	1½	"	"	
½ " ⅜ "	"	1½	"	"	
1 to 1½ " ¼ to $\frac{5}{16}$ "	"	1	"	"	
½ " ⅞ " ¼ " $\frac{5}{16}$ "	"	1½	"	"	

ROUNDS AND SQUARES, RE-ROLLED.

½ $\frac{9}{16}$ and ⅝ in. diameter	advance	1	cent	per	pound.
⅜ and $\frac{7}{16}$ "	"	1½	"	"	
¼ " $\frac{5}{16}$ "	"	2	"	"	

OVALS, RE-ROLLED.

½ to ⅞ in. wide ..... advance 1½ cent per pound.

HALF OVALS, RE-ROLLED.

½ to ⅞ in. wide ..... advance 1½ cent per pound.

HALF ROUNDS, RE-ROLLED.

⅝ to ¾ in. wide ..... advance 1½ cent per pound.

NAIL RODS, ROLLED.

⅜ × $\frac{3}{16}$ for Machine Made Horse Nails		
$\frac{13}{32}$ × $\frac{3}{16}$ " "		
$\frac{7}{16}$ × $\frac{3}{16}$ " "		
$\frac{15}{32}$ × $\frac{3}{16}$ " "		

NAIL RODS, SLIT.

⅜ × $\frac{3}{16}$ Best Brands Norway		
$\frac{5}{16}$ × $\frac{3}{16}$ " "		
¼ × $\frac{3}{16}$ " "		

"U. S." IRON.

WARRANTED EQUAL TO ANY IRON KNOWN.

Classification.

FLAT BAR.

	RATE.
1½ to 6 in. wide by ⅜ to 1 in. thick	8 cents.
2 " 6 " 1⅛ " 1½ "	8 "
1⅛ " 1⅜ " ⅜ " ¾ "	8 "
⅝ " 1 " 5/16 " ⅞ "	9 "
1½ " 6 " 3/16 " ¼ "	9 "
½ " 1⅜ " 3/16 " ¼ "	10 "
⅞ " 3 " ⅛ "	11 "

ROUND AND SQUARE.

½ to 3½ in.	8 cents.
5/16 " 7/16	9 "
¼	10 "

OVAL.

⅝ to 1¼	9 cents.
⅜ " ½	10 "

HALF OVAL AND HALF ROUND.

⅝ to 1¼ in.	10 cents.
⅜ " ½	11 "

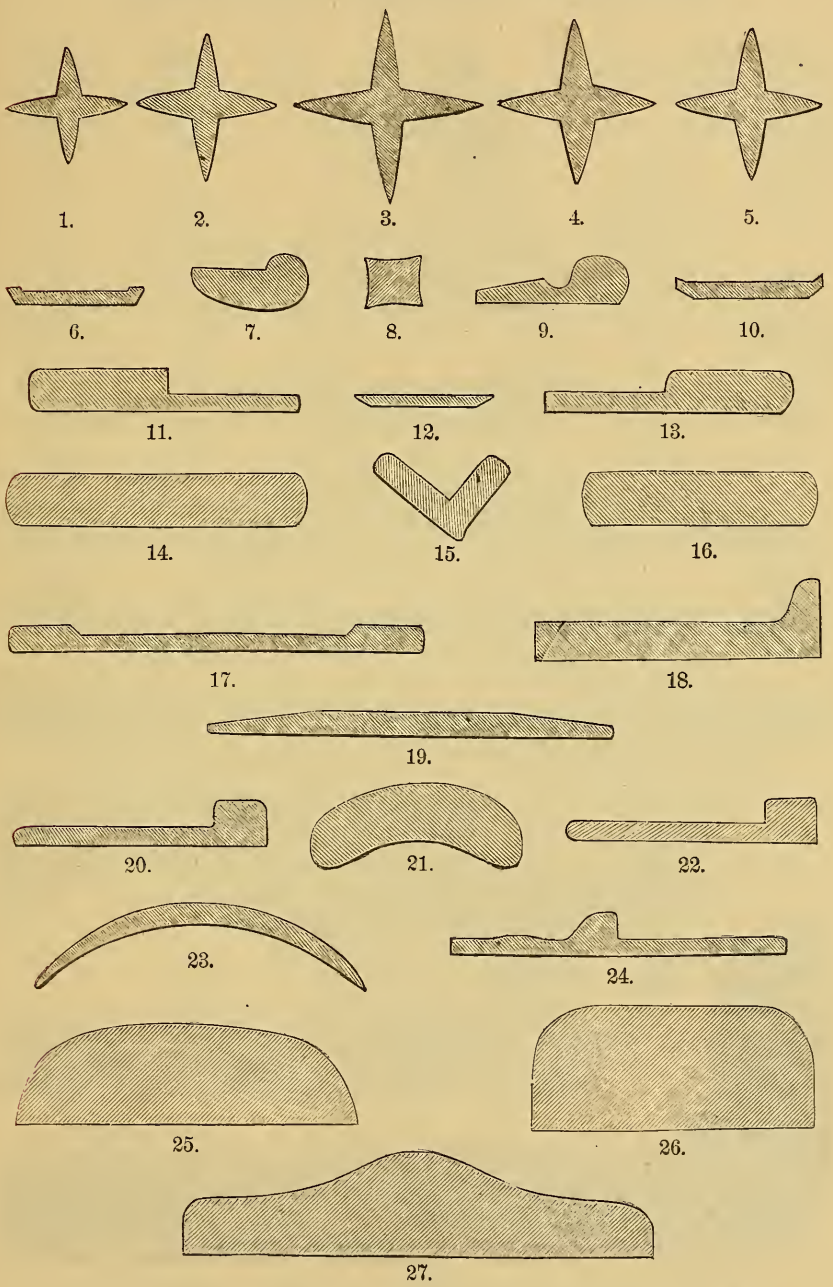
"U. S." BOILER PLATE AND FIRE BOX IRON.

WARRANTED ALL FLANGING AND UNEXCELLED.

Boiler Plate, 3/16 in. thick and upward, ordinary sizes	cents.
" Heads	"
Fire Box Iron	"

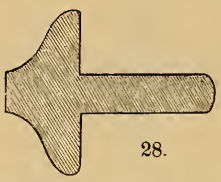
The "U. S." Iron is manufactured from a celebrated brand of cold-blast charcoal metal, under the direct supervision of the Messrs. Brown; is rolled solid from the bloom, thus doing away with all cracks, seams or piling streaks. It is especially adapted for fine light work, requiring great strength and ductility in the working, and for chains, crow-bars, etc., where entire dependence must be placed on the uniformity of the iron. It takes on a peculiarly silvery finish when polished, making it especially desirable for all polished work, gun barrels, etc., and has been largely used by the United States Government for such purposes.

ROLLED SHAPES OF IRON.



Above cuts are full size of the iron, and can be furnished to order.

ROLLED SHAPES OF IRON.



28.

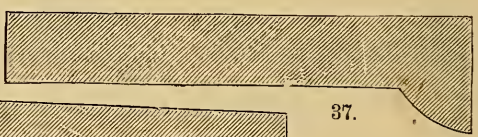
29.

30.

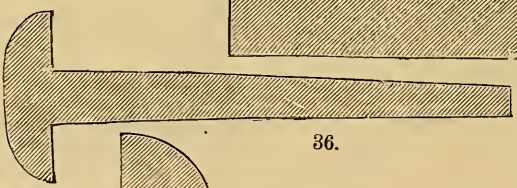
31.

32. 4¼ in. wide. 33. 5½ in. wide.

34. 6⅛ in. wide. 35. 7⅞ in. wide.

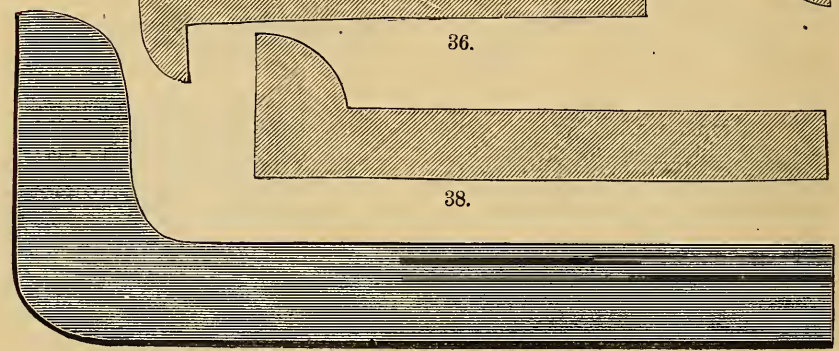


37.



36.

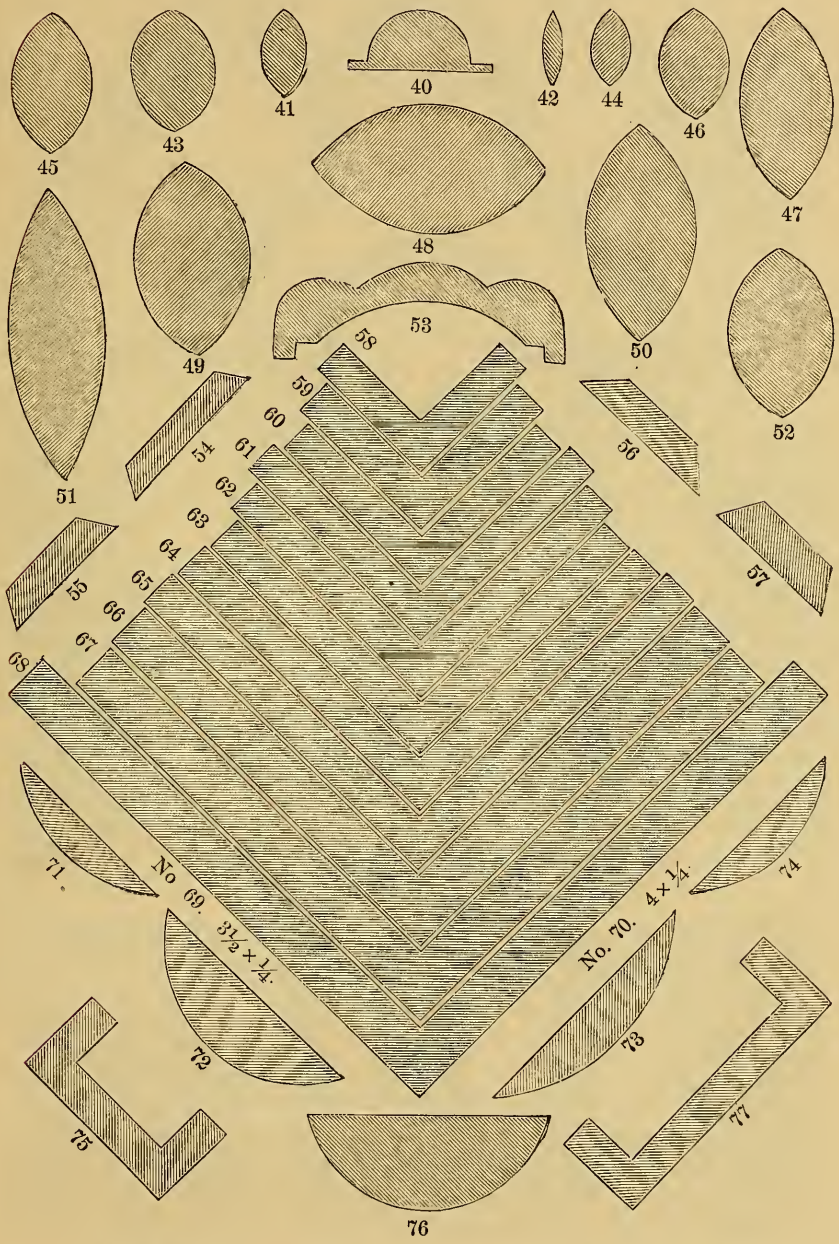
38.



39.

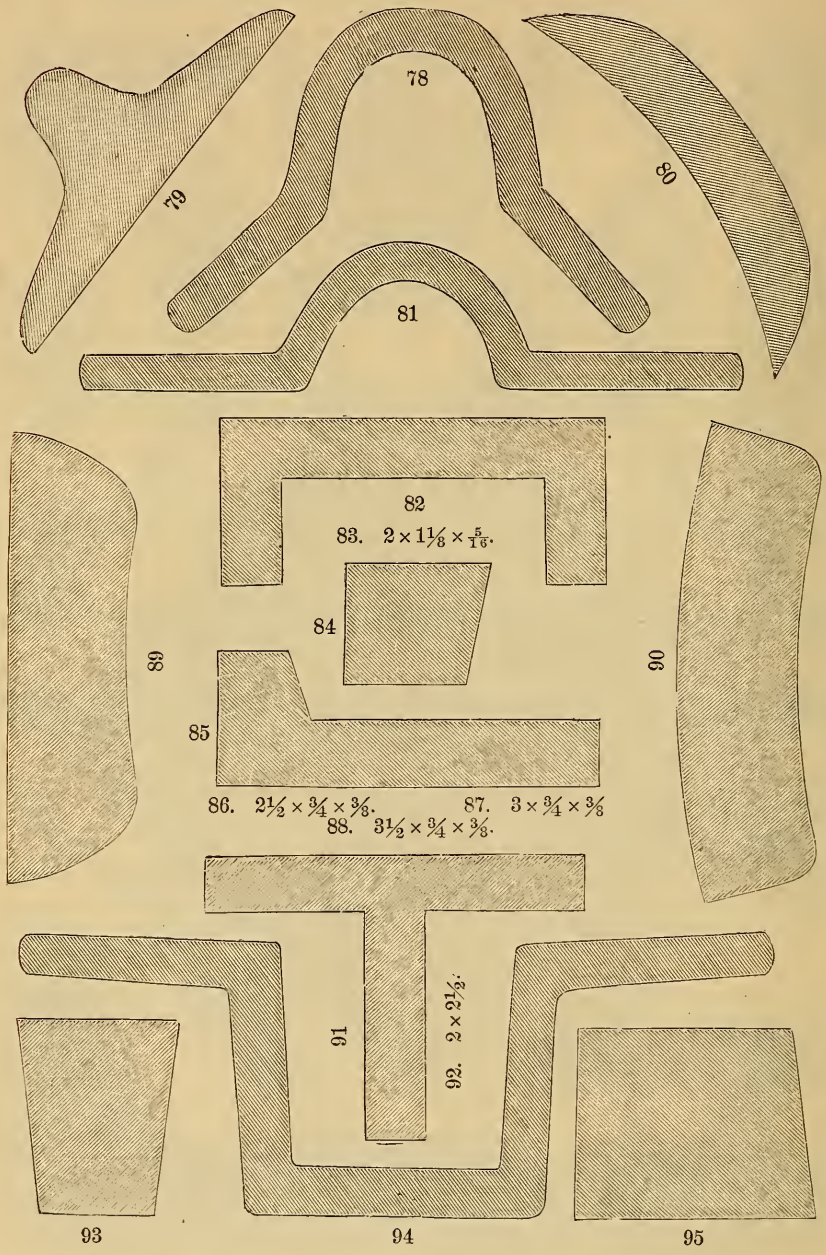
Above sections, the widths of which are not given, are full size of the iron.

ROLLED SHAPES OF IRON.



Above sections, except Nos. 69 and 70, are full size of the iron.
Nos. 58 to 70 are termed Square-Root Angles.

ROLLED SHAPES OF IRON.



Above sections, except Nos. 83, 86, 87, 88 and 92, are full size of the iron.

WEIGHT OF FLAT ROLLED IRON.

ONE FOOT IN LENGTH.

Width. inches.	Thickness. 1/8 in.	3/16 in.	1/4 in.	5/16 in.	3/8 in.	7/16 in.	1/2 in.	5/8 in.	3/4 in.	7/8 in.	1 in.	1 1/4 in.
1/2	.242	.316	.422	.528	.634	.738	.845	1.056	1.265	1.477	1.690	2.112
5/8	.276	.395	.528	.660	.792	.923	1.056	1.320	1.584	1.846	2.112	2.640
3/4	.316	.474	.633	.792	.950	1.108	1.265	1.584	1.901	2.217	2.534	3.168
7/8	.369	.553	.738	.923	1.108	1.294	1.477	1.846	2.217	2.588	2.956	3.696
1	.422	.633	.845	1.056	1.267	1.478	1.690	2.112	2.534	2.956	3.380	4.224
1 1/8	.474	.711	.950	1.187	1.425	1.663	1.901	2.375	2.850	3.326	3.802	4.752
1 1/4	.528	.790	1.056	1.320	1.584	1.848	2.112	2.640	3.168	3.696	4.224	5.280
1 3/8	.581	.869	1.161	1.452	1.742	2.032	2.325	2.904	3.484	4.065	4.646	5.808
1 1/2	.634	.948	1.266	1.584	1.900	2.217	2.535	3.168	3.802	4.435	5.069	6.337
1 5/8	.687	1.027	1.372	1.716	2.059	2.402	2.746	3.432	4.119	4.805	5.492	6.864
1 3/4	.740	1.106	1.479	1.848	2.218	2.589	2.957	3.696	4.435	5.178	5.914	7.393
1 7/8	.793	1.185	1.584	1.980	2.376	2.772	3.168	3.960	4.752	5.544	6.336	7.921
2	.846	1.264	1.689	2.112	2.534	2.957	3.379	4.224	5.069	5.914	6.758	8.448
2 1/8	.899	1.343	1.795	2.244	2.693	3.141	3.591	4.488	5.386	6.283	7.181	8.977
2 1/4	.952	1.422	1.900	2.376	2.851	3.326	3.802	4.751	5.703	6.653	7.604	9.505
2 3/8	1.005	1.501	2.006	2.508	3.009	3.511	4.013	5.016	6.019	7.022	8.025	10.032
2 1/2	1.058	1.580	2.112	2.640	3.168	3.696	4.224	5.280	6.336	7.392	8.448	10.560
2 3/4	1.264	1.659	2.323	2.904	3.485	4.066	4.647	5.808	6.970	8.132	9.294	11.617
3	1.370	1.817	2.535	3.168	3.802	4.435	5.069	6.337	7.604	8.871	10.138	12.673
3 1/4	1.476	1.975	2.746	3.432	4.119	4.805	5.492	6.865	8.237	9.610	10.983	13.730
3 1/2	1.582	2.132	2.957	3.696	4.436	5.175	5.914	7.393	8.871	10.350	11.828	14.785
3 3/4	1.688	2.291	3.168	3.960	4.752	5.544	6.336	7.921	9.505	11.089	12.673	15.841
4	1.794	2.449	3.380	4.224	5.069	5.914	6.759	8.448	10.138	11.828	13.518	16.897
4 1/2	1.906	2.607	3.802	4.752	5.703	6.653	7.604	9.504	11.406	13.306	15.208	19.010
5	2.118	2.923	4.224	5.280	6.336	7.392	8.449	10.560	12.673	14.784	16.897	21.122
5 1/2	2.330	3.239	4.647	5.808	6.970	8.132	9.294	11.616	13.940	16.264	18.587	23.234
6	2.542	3.555	5.070	6.337	7.604	8.871	10.138	12.674	15.208	17.742	20.276	25.346

WEIGHT OF ROUND ROLLED IRON.

ONE FOOT IN LENGTH.

Diam.	Weight.	Diam.	Weight.	Diam.	Weight.	Diam.	Weight.	Diam.	Weight.
1/16	.010	1 1/8	3.360	2 3/4	20.076	4 3/4	59.900	7 1/2	149.328
1/8	.041	1 3/16	3.744	2 7/8	21.944	4 7/8	63.094	7 3/4	159.456
3/16	.094	1 1/4	4.172	3	23.888	5	66.752	8	169.856
1/4	.165	1 5/16	4.573	3 1/8	25.926	5 1/8	69.731	8 1/4	180.696
5/16	.261	1 3/8	5.019	3 1/4	28.040	5 1/4	73.172	8 1/2	191.808
3/8	.373	1 7/16	5.486	3 3/8	30.240	5 3/8	76.700	8 3/4	203.260
7/16	.508	1 1/2	5.972	3 1/2	32.512	5 1/2	80.304	9	215.040
1/2	.663	1 5/8	7.010	3 5/8	34.886	5 5/8	84.001	9 1/4	227.152
9/16	.840	1 3/4	8.128	3 3/4	37.332	5 3/4	87.776	9 1/2	239.600
5/8	1.043	1 7/8	9.333	3 7/8	39.864	5 7/8	91.634	9 3/4	252.376
11/16	1.255	2	10.616	4	42.464	6	95.552	10	267.008
3/4	1.493	2 1/8	11.988	4 1/8	45.174	6 1/4	103.704	10 1/4	278.924
13/16	1.752	2 1/4	13.440	4 1/4	47.952	6 1/2	112.160	10 1/2	292.688
7/8	2.032	2 3/8	14.975	4 3/8	50.815	6 3/4	120.960	11	321.216
15/16	2.333	2 1/2	16.688	4 1/2	53.760	7	130.048	11 1/2	351.104
1	2.654	2 5/8	18.293	4 5/8	56.788	7 1/4	139.544	12	382.208
1 1/16	2.997								

WEIGHT OF SQUARE IRON.

ONE FOOT IN LENGTH.

Size.	Weight.	Size.	Weight.	Size.	Weight.	Size.	Weight.	Size.	Weight.
1/16	.013	1 1/8	4.278	3 1/8	33.010	5 1/8	88.784	8 1/4	230.068
1/8	.053	1 1/4	5.280	3 1/4	35.704	5 1/4	93.168	8 1/2	244.220
3/16	.119	1 3/8	6.390	3 3/8	38.503	5 3/8	97.657	8 3/4	258.800
1/4	.211	1 1/2	7.604	3 1/2	41.408	5 1/2	102.240	9	273.792
5/16	.330	1 5/8	8.926	3 5/8	44.418	5 5/8	106.953	9 1/4	289.220
3/8	.475	1 3/4	10.352	3 3/4	47.534	5 3/4	111.756	9 1/2	305.056
7/16	.647	1 7/8	11.883	3 7/8	50.756	5 7/8	116.671	9 3/4	321.332
1/2	.845	2	13.520	4	54.084	6	121.664	10	337.920
9/16	1.069	2 1/8	15.263	4 1/8	57.517	6 1/4	132.040	10 1/4	355.136
5/8	1.320	2 1/4	17.112	4 1/4	61.055	6 1/2	142.816	10 1/2	372.672
11/16	1.597	2 3/8	19.066	4 3/8	64.700	6 3/4	154.012	10 3/4	390.628
3/4	1.901	2 1/2	21.120	4 1/2	68.448	7	165.632	11	408.960
13/16	2.231	2 5/8	23.292	4 5/8	72.305	7 1/4	177.672	11 1/4	427.812
7/8	2.588	2 3/4	25.560	4 3/4	76.264	7 1/2	190.136	11 1/2	447.024
15/16	2.971	2 7/8	27.939	4 7/8	80.333	7 3/4	203.024	11 3/4	466.684
1	3.380	3	30.416	5	84.480	8	216.336	12	486.656
1 1/16	3.816								

WEIGHT OF TIRE IRON,

PER SET OF 54 FEET.

Light Tire.

WIDTH.	THICKNESS.				
	3/16 in.	1/4 in.	5/16 in.	3/8 in.	7/16 in.
INCHES.	POUNDS.	POUNDS.	POUNDS.	POUNDS.	POUNDS.
7/8	30	40	--	--	--
1	34	45	56	68	--
1 1/8	38	50	63	75	88
1 1/4	43	56	70	85	99
1 3/8	--	--	78	93	109
1 1/2	--	--	--	101	117

Heavy Tire.

WIDTH.	THICKNESS.					
	1/2 in.	9/16 in.	5/8 in.	3/4 in.	7/8 in.	1 in.
INCHES.	POUNDS.	POUNDS.	POUNDS.	POUNDS.	POUNDS.	POUNDS.
1 1/8	101	---	---	---	---	---
1 1/4	113	---	---	---	---	---
1 3/8	124	---	---	---	---	---
1 1/2	135	153	169	201	239	273
1 5/8	148	166	183	222	259	296
1 3/4	158	173	197	236	279	319
2	180	---	225	270	319	365
2 1/4	205	---	256	304	359	410
2 1/2	228	---	285	342	399	456

CAPACITY OF TANKS OR CISTERNS,

IN GALLONS, FOR EACH 10 INCHES IN DEPTH.

Diam. in Feet.	Gallons.	Diam. in Feet.	Gallons.	Diam. in Feet.	Gallons.	Diam. in Feet.	Gallons.
2	19.5	5.5	148.1	9	396.56	15	1,101.6
2.5	30.5	6	176.25	9.5	461.4	20	1,958.4
3	44.6	6.5	206.85	10	489.6	25	3,059.9
3.5	59.97	7	239.88	11	592.4	30	4,406.4
4	78.33	7.5	275.4	12	705	35	5,990
4.5	99.14	8	313.33	13	827.4	40	7,831
5	122.4	8.5	353.72	14	959.6	45	9,911

AVERAGE WEIGHT OF COALS,

PER BUSHEL.

1 bushel	Anthracite equals	86 pounds.
1 "	Bituminous "	80 "
1 "	Charcoal (hardwood) equals	30 "
1 "	Coke equals	32 "

VALUE OF IRON, PER GROSS TON,

AT FROM 2 TO 12½ CENTS PER POUND.

2	44.80	4⅛	92.40	6¼	140.00	8⅜	187.60	10½	235.20
2⅛	47.60	4¼	95.20	6⅜	142.80	8½	190.40	10⅝	238.00
2¼	50.40	4⅜	98.00	6½	145.60	8⅝	193.20	10¾	240.80
2⅜	53.20	4½	100.80	6⅝	148.40	8¾	196.00	10⅞	243.60
2½	56.00	4⅝	103.60	6¾	151.20	8⅞	198.80	11	246.40
2⅝	58.80	4¾	106.40	6⅞	154.00	9	201.60	11⅛	249.20
2¾	61.60	4⅞	109.20	7	156.80	9⅛	204.40	11¼	252.00
2⅞	64.40	5	112.00	7⅛	159.60	9¼	207.20	11⅜	254.80
3	67.20	5⅛	114.80	7¼	162.40	9⅜	210.00	11½	257.60
3⅛	70.00	5¼	117.60	7⅜	165.20	9½	212.80	11⅝	260.40
3¼	72.80	5⅜	120.40	7½	168.00	9⅝	215.60	11¾	263.20
3⅜	75.60	5½	123.20	7⅝	170.80	9¾	218.40	11⅞	266.00
3½	78.40	5⅝	126.00	7¾	173.60	9⅞	221.20	12	268.80
3⅝	81.20	5¾	128.80	7⅞	176.40	10	224.00	12⅛	271.60
3¾	84.00	5⅞	131.60	8	179.20	10⅛	226.80	12¼	274.40
3⅞	86.80	6	134.40	8⅛	182.00	10¼	229.60	12⅜	277.20
4	89.60	6⅛	137.20	8¼	184.80	10⅜	232.40	12½	280.00

CIRCUMFERENCE OF CIRCLES,

FOR BOILER-MAKERS' CONVENIENCE.

Diameter.	Circumference.	Diameter.	Circumference.	Diameter.	Circumference.
INCHES.	INCHES.	INCHES.	INCHES.	INCHES.	INCHES.
12	37.69	36	113	60	188.4
14	43.68	38	119.3	62	184.8
16	50.26	40	125.6	64	201
18	56.54	42	121.9	66	207.3
20	62.85	44	138.2	68	213.6
22	69.11	46	144.5	70	219.9
24	75.39	48	150.7	72	226.1
26	81.68	50	157	74	232.4
28	87.96	52	163.3	76	238.7
30	94.24	54	169.9	78	245.0
32	100.5	56	175.9	80	251.3
34	106.8	58	182.2		

Boiler-makers usually add one inch to length of iron for the *take up* in rolling; also two inches for each lap.

METALS.

WEIGHT PER SQUARE FOOT.

Thickness.	Wrought Iron.	Cast Iron.	Steel.	Copper.	Brass.	Lead.	Zinc.
	POUNDS.	POUNDS.	POUNDS.	POUNDS.	POUNDS.	POUNDS.	POUNDS.
1/16 in.	2.51	2.34	2.55	2.89	2.67	3.69	2.34
1/8	5.03	4.69	5.10	5.78	5.35	7.38	4.68
3/16	5.55	7.03	7.66	8.67	8.02	11.07	7.02
1/4	10.07	9.38	10.21	11.56	10.7	14.76	9.36
5/16	12.58	11.73	12.76	14.45	13.37	18.45	11.7
3/8	15.10	14.07	15.31	17.34	16.05	22.14	14.04
7/16	17.62	16.42	17.87	20.23	18.72	25.83	16.34
1/2	20.14	18.77	20.42	23.12	21.4	29.53	18.72
9/16	22.65	21.11	22.97	26.01	24.07	33.22	21.08
5/8	25.17	23.46	25.52	28.90	26.75	36.91	23.44
11/16	27.69	25.81	28.08	31.97	29.42	40.60	25.80
3/4	30.21	28.15	30.63	34.68	32.1	44.29	28.13
13/16	32.72	30.50	33.18	37.57	35.19	47.98	30.49
7/8	35.24	32.85	35.73	40.69	38.28	51.67	32.81
15/16	37.76	35.19	38.28	43.35	41.37	55.37	35.17
1	40.28	37.54	40.83	46.25	43.75	59.06	37.50

WIRE GAUGES,

AMERICAN AND BIRMINGHAM,

COMPARED IN THICKNESS.

Birmingham.		*American.*	
No. 0000	7/16+ in.	No. 0000	7/16+ in.
" 00	3/8+	" 00	3/8−
" 1	5/16−	" 0	5/16+
" 3	1/4+	" 2	1/4+
" 7	3/16−	" 5	3/16−
" 11	1/8−	" 8	1/8+
" 16	1/16+	" 14	1/16+
" 21	1/32+	" 20	1/32+

ROOFING SLATE.

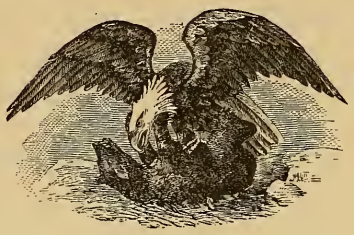
WEIGHT PER SQUARE FOOT.

Thickness,	1/8	3/16	1/4	3/8	1/2	5/8	3/4	1	inch.
Weight,	1.81	2.71	3.62	5.43	7.25	9.06	10.87	14.5	pounds.

A square of slate is what will cover 100 feet square when laid upon the roof.

Weight per Cubic Foot, 174 pounds.

SHEET IRON.

TRADE  MARK.

W. D. WOOD & CO'S.

Patent Planished.

PATENTED MARCH 14, 1865; SEPT. 9, 1873; OCT. 6, 1874.

First Quality	**A**,	28	in. wide by	60	in. long	14	cents per	pound.
Second "	**B**,	28	"	60	"	11	"	"
Third "	**X**,	28	"	60	"	9	"	"

Pattern sheets made from 24 to 30 in. wide, and from 56 to 72 in. long, ½ cent per pound extra.

Juniata.

SMOOTH FINISH.

Nos. 10 to 14	$7\frac{5}{10}$	cents per	pound.
15 " 20	$7\frac{7}{10}$	"	"
21 " 24	$7\frac{9}{10}$	"	"
25 & 26	$8\frac{1}{10}$	"	"
27	$8\frac{3}{10}$	"	"

Charcoal.

DOUBLE REFINED—SMOOTH FINISH.

Nos. 10 to 14	$6\frac{1}{10}$	cents per	pound.
15 " 20	$6\frac{3}{10}$	"	"
21 " 24	$6\frac{5}{10}$	"	"
25 & 26	$6\frac{7}{10}$	"	"
27	$6\frac{9}{10}$	"	"

Refined.

SMOOTH FINISH.

Nos. 10 to 14			cents per	pound.
15 " 20	advance	$\frac{3}{10}$	"	"
21 " 24	"	$\frac{5}{10}$	"	"
25 & 26	"	$\frac{7}{10}$	"	"
27	"	$\frac{9}{10}$	"	"

All sheets over 28 in. wide, and over 96 in. long, ¼ cent per pound extra.

Cleaned and Scaled.

Two cents extra on any quality or size.

BLACK SHEET IRON.

Common.

Nos. 10 to 14 × 24 to 28 in. wide				cents per pound.	
15 " 20 × 24 " 28	"	advance	$\frac{2}{10}$	"	"
21 " 24 × 24 " 28	"	"	$\frac{5}{10}$	"	"
25 " 26 × 24 " 28	"	"	$\frac{7}{10}$	"	"
27 × 24 " 28	"	"	$\frac{9}{10}$	"	"
28 × 24 " 28	"	"	$1\frac{1}{4}$	"	"
30 × 24 " 28	"	"	$1\frac{3}{4}$	"	"

All sheets over 28 in. wide or 96 in. long, charged extra.

Juniata.

Nos. 10 to 14 × 24 to 28 in. wide				cents per pound.	
15 " 20 × 24 " 28	"	advance	$\frac{2}{10}$	"	"
21 " 24 × 24 " 28	"	"	$\frac{5}{10}$	"	"
25 " 26 × 24 " 28	"	"	$\frac{7}{10}$	"	"
27 × 24 " 28	"	"	$\frac{9}{10}$	"	"

Charcoal.

Nos. 10 to 14 × 24 to 28 in. wide				cents per pound.	
15 " 20 × 24 " 28	"	advance	$\frac{2}{10}$	"	"
21 " 24 × 24 " 28	"	"	$\frac{5}{10}$	"	"
25 " 26 × 24 " 28	"	"	$\frac{7}{10}$	"	"
27 × 24 " 28	"	"	$\frac{9}{10}$	"	"

Black Crimped.

FOR ROOFING.

Nos. 20			cents per pound.	
21, 22, 23 and 24	advance	$\frac{1}{4}$		"

Black Corrugated.

FOR ROOFING.

Nos. 20			cents per pound.	
21, 22, 23 and 24	advance	$\frac{1}{4}$	"	"

Crimped sheets are from 21 to 28 inches wide, losing about two inches in the process of crimping.

Corrugated sheets are 30 inches wide before corrugating, and 28 × 96 inches when finished. This is the extreme length and breadth, but the sheets can be made shorter if required. They lay 25 inches on the roof.

GALVANIZED SHEET IRON.

AMERICAN MANUFACTURE.

Nos. 14, 15, 16, 17, 18, 19 and 20	12	cents per pound.
21, 22, 23 and 24	13	" "
25 and 26	14	" "
27	15	" "
28	16	" "
29	18	" "

STANDARD SIZES.

EXTREME SIZES.

Nos. 10 to 17 Iron	24, 26, 28 and 30 × 72	and 96 in.,	44 × 120	in.
18 " 20 "	24, 26, 28 " 30 × 72	" 96	44 × 120	
21 " 24 "	24, 26, 28 " 30 × 72	" 96	44 × 96	
25 & 26 "	24, 26, 28 " 30 × 72	" 96	36 × 72	
27 & 28 "	24, 26, 28 " 30 × 72	" 96	30 × 96	

EXTRA SIZES.

ADDITIONAL PRICES.

Nos. 18 to 21 × 31 to 36 in	½	cent per pound.
18 " 21 × 38 " 44	1	" "
22 " 24 × 31 " 36	¾	" "
22 " 24 × 38 " 44	1½	" "
25 " 26 × 36 × 72	1	" "
Under 24 in. wide, extra	1	" "
Over 96 in. long, to 108 in.	½	" "
" 108 " " 120	1	" "

Galvanized Crimped.

FOR ROOFING.

No. 20		cents per pound.
21, 22, 23 and 24	advance ¼	" "

Galvanized Corrugated.

FOR ROOFING.

No. 20		cents per pound.
21, 22, 23 and 24	advance ¼	" "

Crimped sheets are from 21 to 28 inches wide, losing about two inches in the process of crimping.

Corrugated sheets are 30 inches wide before corrugating, and 28 by 96 inches when finished. This is the extreme length and breadth, but the sheets can be made shorter if required. They lay 25 inches on the roof.

SAP PAN IRON.

Common.

Nos. 14 to 16×48× 96			cents	per pound.
14 " 16×48×120	advance	½	"	"
14 " 16×48×144	"	1	"	"
17 " 22×48×120	"	2	"	"
17 " 22×48×144	"	2½	"	"
17 " 24×36× 96	"	¾	"	"
17 " 24×44× 96	"	1	"	"
17 " 24×44×120	"	2	"	"
17 " 24×46× 96	"	1½	"	"
17 " 24×48× 96	"	1¾	"	"

Charcoal.

Nos. 14 to 16×48× 97			cents	per pound.
14 " 16×48×120	advance	½	"	"
14 " 16×48×144	"	1	"	"
17 " 22×48×120	"	2	"	"
17 " 22×48×144	"	2½	"	"
17 " 24×36× 96	"	¾	"	"
17 " 24×44× 96	"	1	"	"
17 " 24×44×120	"	2	"	"
17 " 24×46× 96	"	1½	"	"
17 " 24×48× 96	"	1¾	"	"

Juniata.

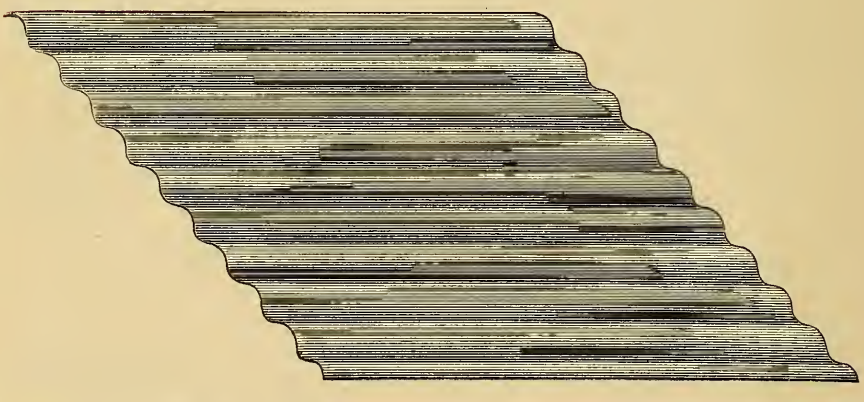
Nos. 14 to 16×48× 96			cents	per pound.
14 " 16×48×120	advance	3½	"	"
14 " 16×48×144	"	4	"	"
17 " 22×48×120	"	5	"	"
17 " 22×48×144	"	5½	"	"
17 " 24×36× 96	"	3¾	"	"
17 " 24×44× 96	"	4	"	"
17 " 24×44×120	"	5	"	"
17 " 24×46× 96	"	4½	"	"
17 " 24×48× 96	"	4¾	"	"

CORRUGATED IRON ROOFING.

Large Corrugations ..... ¾ to 1¼ in. deep, 5 in. wide.

Cut to any length up to 9 feet.

Above sheet will cover 24½ in. in width.

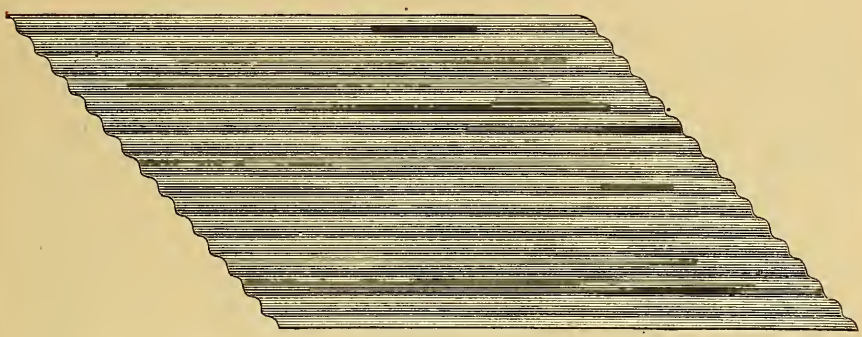


Medium Corrugations..... ½ to ¾ in. deep, 2½ in. wide.

Above sheet will cover 24 in. in width.

Curved to any required curve.

CORRUGATED IRON ROOFING.



Small Corrugations ..... ¼ to ⅝ in. deep, 1¼ in. wide.

Above Sheet will cover 24 in. in width.

PRICE LIST.

Number of Wire Gauge	20	21	22	23	24	25	26
Weight per Square Foot on Roof	$1\frac{80}{100}$	$1\frac{68}{100}$	$1\frac{46}{100}$	$1\frac{32}{100}$	$1\frac{20}{100}$	$1\frac{09}{100}$	$1\frac{06}{100}$

Price per pound ..... Black, subject to special quotation.
" " ..... Galvanized, " " "
Curved ..... ¾ cent per pound extra.
Painted ..... ¾ " " "

The history of Iron Roofing for the past fifty years or more has demonstrated that Iron is the best metal for roofing purposes where economy, durability and protection from the elements are carefully considered. It has been extensively used throughout the United States and Europe, and wherever properly introduced has furnished conclusive evidence of its claims to superiority and reliability.

Tin costs more than iron and is far inferior in strength and durability. Iron, being rough and porous, takes up the paint more readily and holds it better under the influences of extreme heat and cold.

Slate will crack, crumble, slide off, and is difficult to repair.

CORRUGATED IRON is reliable in all that pertains to a thoroughly Fire, Water and Rust Proof Roof. The iron from which it is made is manufactured especially for the purpose, so as to give the metal great pliability, density and fineness of grain, with a uniform surface, enabling it completely to resist the action of acids or water. It is free from imperfections, and being extra annealed has a flexibility that allows it to be worked without fear of cracking or breaking.

WEIGHT OF SHEET IRON.

PER SQUARE FOOT.

THICKNESS AMERICAN WIRE GAUGE.

Wire Gauge.	Thickness.	Weight.	Wire Gauge.	Thickness.	Weight.
NUMBER.	INCH.	POUNDS.	NUMBER.	INCH.	POUNDS.
0000	.46	18.457	14	.064	2.571
000	.409	16.436	15	.057	2.289
00	.364	14.637	16	.050	2.039
0	.324	13.035	17	.045	1.815
1	.289	11.608	18	.040	1.617
2	.257	10.337	19	.035	1.44
3	.229	9.205	20	.031	1.282
4	.204	8.197	21	.028	1.142
5	.181	7.300	22	.025	1.017
6	.162	6.501	23	.022	.905
7	.144	5.789	24	.020	.806
8	.128	5.155	25	.017	.718
9	.114	4.591	26	.015	.639
10	.101	4.088	27	.014	.569
11	.090	3.641	28	.012	.507
12	.080	3.242	29	.011	.451
13	.071	2.887	30	.010	.402

THICKNESS PER GAUGE.

Nos.	4	5	6	8	10	12	13	14	16	18	21	27
Inch	$\frac{1}{4}$	$\frac{7}{32}$	$\frac{3}{16}$	$\frac{11}{64}$	$\frac{1}{8}$	$\frac{7}{64}$	$\frac{3}{32}$	$\frac{5}{64}$	$\frac{1}{16}$	$\frac{3}{64}$	$\frac{1}{32}$	$\frac{1}{64}$

WEIGHT OF GALVANIZED SHEET IRON.

PER SQUARE FOOT.

Wire Gauge.	Thickness.	Weight Flat.	Weight Corrugated.	Weight Corrugated on Roof.
No. 30	.012	.806	.896	1.08
29	.013	.857	.952	1.14
28	.014	.897	.997	1.20
27	.016	.978	1.09	1.30
26	.018	1.06	1.18	1.41
25	.020	1.14	1.27	1.52
24	.022	1.22	1.36	1.62
23	.025	1.34	1.49	1.79
22	.028	1.46	1.62	1.95
21	.032	1.63	1.81	2.17
20	.035	1.75	1.94	2.33
19	.042	2.03	2.26	2.71
18	.049	2.32	2.58	3.09
17	.058	2.68	2.98	3.57
16	.065	2.96	3.29	3.95
15	.072	3.25	3.61	4.33
14	.083	3.69	4.10	4.92
13	.095	4.18	4.64	5.57

PLATE IRON.

Common.

$\frac{3}{16}$ to 1 in. thick ..... cents per pound.

Tank.

$\frac{3}{16}$ to 1 in. thick ..... cents per pound.

Safe.

$\frac{3}{16}$ to 1 in. thick ..... cents per pound.

Boiler.

$\frac{3}{16}$ to 1 in. thick, C No. 1—Lake ..... cents per pound.

Fire Sheets.

$\frac{3}{16}$ to 1 in. thick, C No. 1—Lake ..... cents per pound.

Excelsior Boiler.

$\frac{3}{16}$ to 1 in. thick, C H No. 1 ..... cents per pound.

Charcoal Hammered.

$\frac{3}{16}$ to 1 in. thick, C H No. 1 ..... cents per pound.

Excelsior Flange.

$\frac{3}{16}$ to 1 in. thick, C H No. 1 ..... cents per pound.

Extra Flange.

$\frac{3}{16}$ to 1 in. thick—Tennessee ..... cents per pound.

Fire Box.

$\frac{3}{16}$ to 1 in. thick—Excelsior ..... cents per pound.

Extra Fire Box.

$\frac{3}{16}$ to 1 in. thick—Tennessee ..... cents per pound.

Special attention given to Plate Iron of all kinds.

All Plate stamped as per Act of Congress, ¼ cent extra.

GIRDER AND BRIDGE PLATES.

ROLLED ON UNIVERSAL ROLLS.

ANY FRACTION OF AN INCH, FROM 5 TO 24 INCHES IN WIDTH, AND FROM ⅜ TO 6 INCHES IN THICKNESS.

Plates under 20 feet long									cents per pound.	
"	over 20	"	and under 25 feet			advance	½	"	"	
"	" 25	"	" 30	"		"	¾	"	"	
"	" 30	"	" 35	"		"	2½	"	"	
"	" 35	"	" 40	"		"	4	"	"	
"	" 40	"	and up to 50	"		"	6	"	"	

RECTANGULAR PLATES.

EXTRA SIZES.

USUAL LENGTHS, THICKER THAN $\frac{3}{16}$ OF AN INCH.

61 to 66 in. wide, inclusive			advance	½	cent per pound.	
67 " 70	"	"	"	1	"	"
71 " 75	"	"	"	1½	"	"
76 " 80	"	"	"	2¼	"	"
81 " 85	"	"	"	2¾	"	"
86 " 90	"	"	"	3¼	"	"

Usual lengths, rolled $\frac{3}{16}$ in. thick to 44 in. wide, at regular rates.

45 to 53 in. wide, inclusive			advance	¼	cent per pound.	
54 " 60	"	"	"	½	"	"

EXTRA WEIGHTS.

Plates weighing over 800 pounds			and under 1,000 pounds				½	cent extra.		
"	"	" 1,000	"	"	1,200	"		¾	"	"
"	"	" 1,200	"	"	1,400	"		1	"	"
"	"	" 1,400	"	"	1,600	"		1¼	"	"
"	"	" 1,600	"	"	1,800	"		1¾	"	"
"	"	" 1,800	"	"	2,000	"		2¼	"	"

Special attention given to Plate Iron of every description.

BOILER HEADS.

C.—No. 1.

Rolled, 60 in. diameter						cents per pound.	
"	61 to 66 in. diameter, inclusive			advance	½	"	"
"	67 " 70	"	"	"	1	"	"
"	71 " 75	"	"	"	1½	"	"
"	76 " 80	"	"	"	2	"	"
"	81 " 85	"	"	"	3	"	"
"	86 " 90	"	"	"	4	"	"

C. H.—No. 1.

Rolled, 60 in. diameter						cents per pound.	
"	61 to 66 in. diameter, inclusive			advance	½	"	"
"	67 " 70	"	"	"	1	"	"
"	71 " 75	"	"	"	1½	"	"
"	76 " 80	"	"	"	2	"	"
"	81 " 85	"	"	"	3	"	"
"	86 " 90	"	"	"	4	"	"

C. H. Flange.

Rolled, 60 in. diameter						cents per pound.	
"	61 to 66 in. diameter, inclusive			advance	½	"	"
"	67 " 70	"	"	"	1	"	"
"	71 " 75	"	"	"	1½	"	"
"	76 " 80	"	"	"	2	"	"
"	81 " 85	"	"	"	3	"	"
"	86 " 90	"	"	"	4	"	"

Still Bottoms.

Rolled, 60 in. diameter						cents per pound.	
"	61 to 66 in. diameter, inclusive			advance	½	"	"
"	67 " 70	"	"	"	1	"	"
"	71 " 75	"	"	"	1½	"	"
"	76 " 80	"	"	"	2	"	"
"	81 " 85	"	"	"	3	"	"
"	86 " 90	"	"	"	4	"	"

Plates from Patterns and Diagrams, special prices will be quoted.

WEIGHT OF BOILER HEADS
OR
CIRCULAR PLATES.

Diameter.	Area.	1/4 Thick.	5/16 Thick.	3/8 Thick.	7/16 Thick.	1/2 Thick.
INCHES.	INCHES.	POUNDS.	POUNDS.	POUNDS.	POUNDS.	POUNDS.
15	177	12	15	18	21	24
16	201	14	17.5	21	24.5	28
17	227	16.5	20.5	24.5	28.5	33
18	255	17.5	22	26	30	35
19	284	20	25	30	35	40
20	314	22	27.5	33	38.5	44
21	346	24	30	36	42	48
22	380	26.5	33	40	46.5	53
23	416	29	36	43.5	51	58
24	453	31.5	39	47	55	63
25	491	34	42	50.5	59	68
26	531	37	46	55	64	74
27	573	40	50	60	70	80
28	616	43	54	65	76	86
29	661	46	57.5	69	80.5	92
30	707	49	61	73	85	98
31	755	52.5	65.5	78	91	105
32	804	56	70	84	98	112
33	855	59	74	89	104	118
34	908	63	79	95	111	126
35	962	67	84	101	118	134
36	1018	71	89	107	125	142
37	1075	75	94	113	132	150
38	1134	79	99	119	139	158
39	1195	83	104	125	146	166
40	1257	87	109	131	153	174
41	1320	92	115	138	161	184
42	1385	96	120	144	168	192
43	1452	100	125	150	175	200
44	1520	106	132.5	159	185	212
45	1590	110	137.5	165	192.5	220
46	1661	115	144	173	202	230
47	1740	120	150	180	210	240
48	1810	126	157.5	189	220.5	252
49	1886	131	164	197	230	262
50	1964	138	172.5	207	241.5	276
51	2044	142	177.5	213	248.5	284
52	2124	148	185	222	259	296
53	2206	153	191	229	267	306
54	2290	159	199	239	279	318
55	2376	165	206	247	288	330
56	2463	171	214	258	301	342

WEIGHT OF PLATE IRON.

PER SQUARE FOOT.

Thickness.	Weight.	Thickness.	Weight.
1/4 inch	10 pounds.	9/16 inch	22.5 pounds.
5/16 "	12.5 "	5/8 "	25 "
3/8 "	15 "	3/4 "	30 "
7/16 "	17.5 "	7/8 "	35 "
1/2 "	20 "	1 "	40 "

PLOW,

CULTIVATOR, AND OTHER SHAPES,

OF IRON AND STEEL.

IRON OR STEEL PLOW BEAM—PATTERN "A."
2½ by ¾ to inch.

IRON OR STEEL PLOW BEAM—PATTERN "B."
2½ by ¾ to inch.

IRON OR STEEL CULTIVATOR BEAM.
1⅝ by 5-16 to ½ inch

IRON OR STEEL LANDSIDE BEAM.
2½ by 5-16 to ½ inch.

PAPER KNIFE STEEL.
5 and 6 inches wide.

DRILL STEEL.
2 to 3 inches wide.

IRON OR STEEL SLED SHOES.
2 to 3 inches wide.

Above illustrations are Shapes of Iron and Steel that are standard and regular, which are only furnished to order as parties may desire them. Quotations will be sent upon application to us.

CAST PLOW STEEL.

Solid.

4 to 16 in. Wide by $\frac{3}{16}$ to $\frac{3}{8}$ in. thick ..... cents per pound.

Iron Center.

4 to 16 in. wide by $\frac{3}{16}$ to $\frac{3}{8}$ in. thick ..... cents per pound.

Iron Back.

4 to 16 in. wide by $\frac{3}{16}$ to $\frac{3}{8}$ in. thick ..... cents per pound.

Soft Steel Center.

4 to 16 in. wide by $\frac{3}{16}$ to $\frac{3}{8}$ in. thick ..... cents per pound.

Patent Solid Soft Center (Special).

4 to 16 in. wide by $\frac{3}{16}$ to $\frac{3}{8}$ in. thick ..... cents per pound.

Landside and Cultivator.

$\frac{1}{8}$ to $\frac{3}{32}$ in. thick, C. S. ..... cents per pound.
$\frac{3}{16}$ " $\frac{3}{8}$ " ..... " "

Cultivator Steel.

Patent Beveled Edge ..... cents per pound.

Cultivator Shovels.

Diamond Pointed Shape ..... cents per pound.
Flat Iron Shape ..... " "

Circular Plow Coulters.

$\frac{5}{32}$ to $\frac{1}{4}$ in. thick ..... cents per pound.
Beveling and Straightening, each extra ..... " "
Grinding and Polishing, " " ..... " "

Molds and Shares.

Solid Double-shinned Molds, patent, each extra ..... cents per pound.
" " Shares, " " ..... " "

Extras.

Punching Shovels ..... $\frac{1}{4}$ cent per pound.
" Coulters ..... $\frac{1}{4}$ " "

GERMAN PLOW STEEL.

BEST REFINED.

In Slabs.

6½ to 16 in. wide by $\frac{3}{16}$ to ⅜ in. thick ..... cents per pound.

Share Steel.

4 to 6 in. wide by $\frac{3}{16}$ to ⅜ in. thick ..... cents per pound.

Landside and Cultivator.

⅛ to $\frac{3}{32}$ in. thick ..... cents per pound.
$\frac{3}{16}$ " ⅜ " ..... " "

Cultivator Steel.

Patent Beveled Edge ..... cents per pound.

Oval.

Grain Drill ..... cents per pound.

Lay Steel.

Rolled ..... cents per pound.
Hammered ..... " "

Cultivator Shovels.

Diamond Pointed Shape ..... cents per pound.
Flat Iron Shape ..... " "
Triangle " ..... " "

Road Scraper Bottoms.

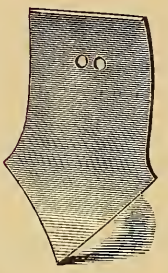
Extra Quality ..... cents per pound.
Second " ..... " "

German Steel.

Puddled ..... cents per pound.

The price of Moldboards, Shares, Landsides, etc., cut to a Pattern, will be regulated according to waste of steel.

FINISHED CULTIVATOR SHAPES.



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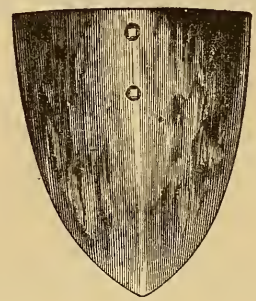

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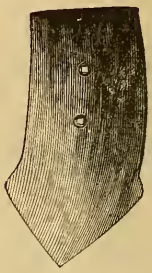

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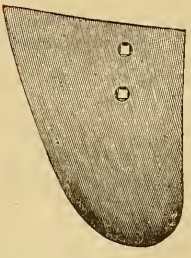

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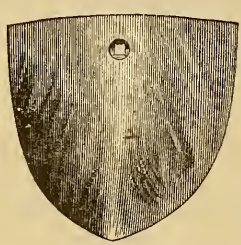

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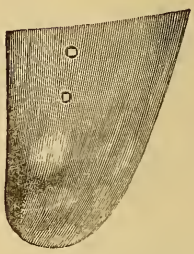
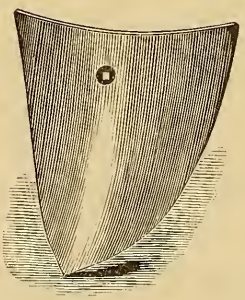


No. 6.

No. 7.



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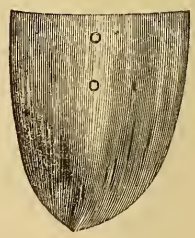

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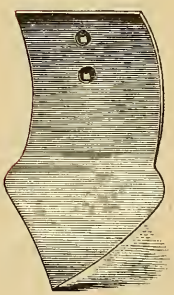

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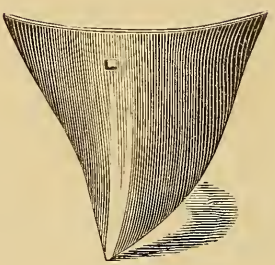

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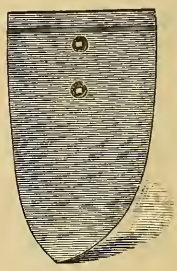
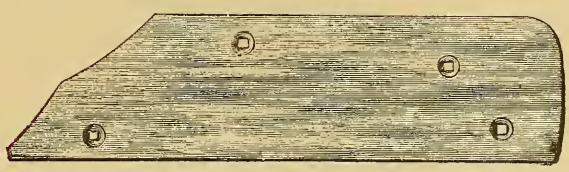
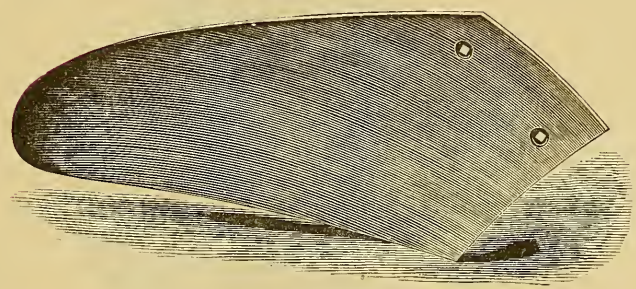


No. 12.

FINISHED PLOW SHAPES.



No. 31. Landside.

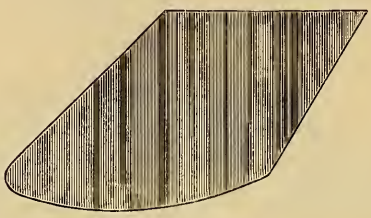


No. 32. Mould Board.

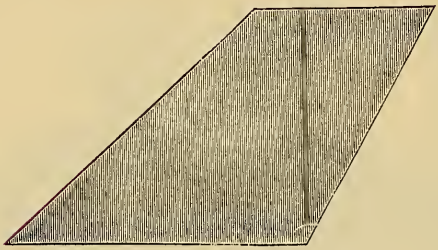
No. 33. Mould Board.

PLOW MOULD BOARDS.

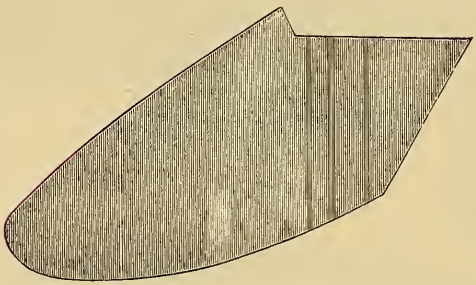
UNFINISHED.



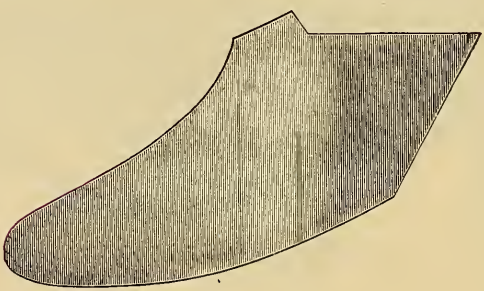
No. 1. Corn Plow.



No. 2. Corn Plow.



No. 3. Plow.



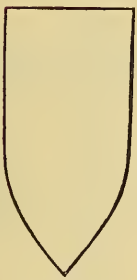
No. 4. Plow.

PLOW MOULD BOARDS.

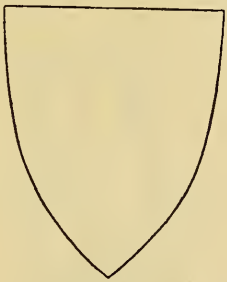
No. 5. Unfinished.

Can be furnished to order, any size or pattern desired, from diagrams.

CULTIVATOR POINTS.



No. 1.



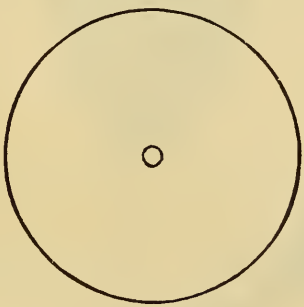
No. 2.

No. 3.

Unfinished.

Can be furnished to order, any size or pattern desired, from diagrams.

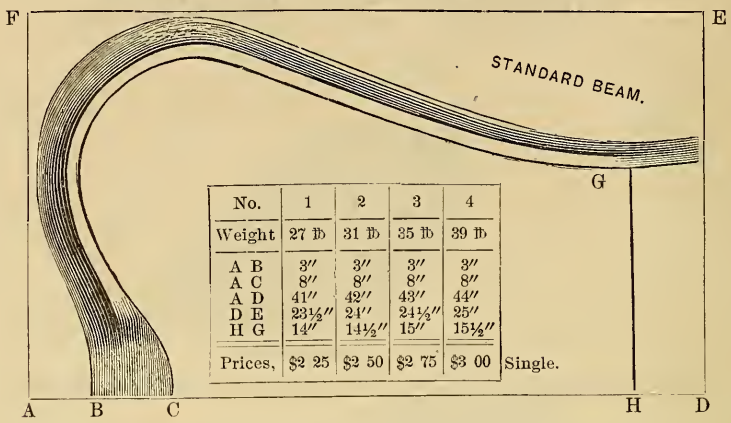
ROLLING COULTERS.



Unfinished.

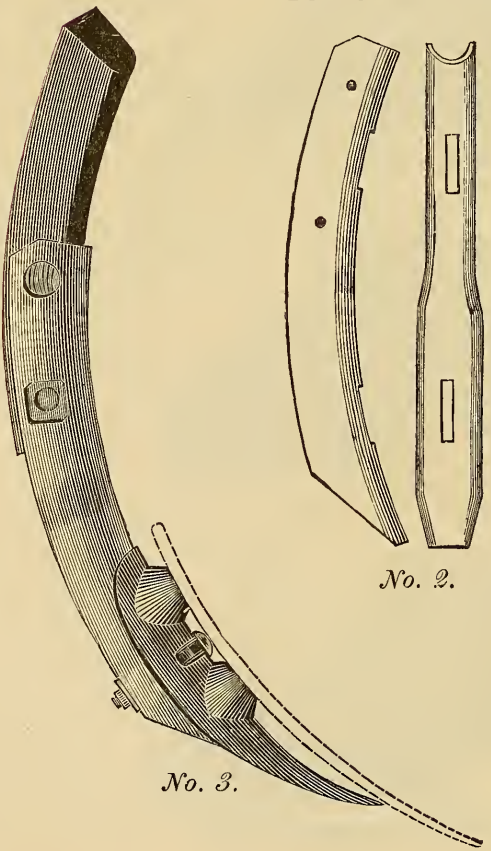
Can be furnished any diameter desired.

STEEL PLOW BEAM.



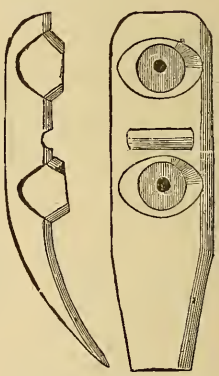
No.	1	2	3	4	
Weight	27 lb	31 lb	35 lb	39 lb	
A B	3″	3″	3″	3″	
A C	8″	8″	8″	8″	
A D	41″	42″	43″	44″	
D E	23½″	24″	24½″	25″	
H G	14″	14½″	15″	15½″	
Prices,	$2 25	$2 50	$2 75	$3 00	Single.

WROUGHT CAST STEEL SLEEVES AND SHOVEL BLOCKS, FOR CULTIVATORS.

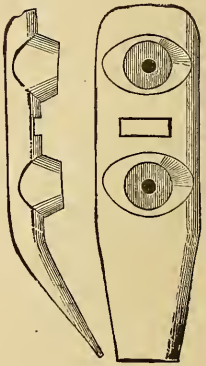


No. 3.

No. 2.

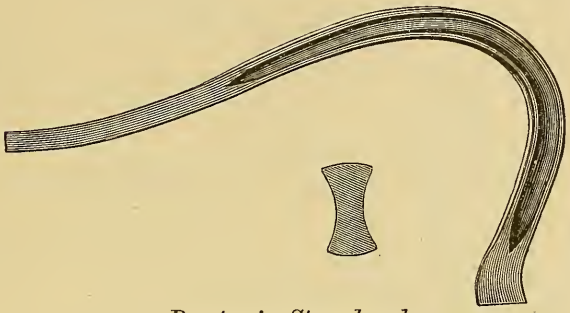


No. 1.



No. 4.

WROUGHT IRON PLOW BEAM.

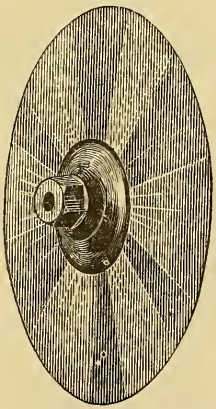


Bouton's Standard.

12 in.	Plow, standard	weight,	35	pounds	$2 50	each.
14	"	"	38	"	2 70	"
16	"	"	45	"	2 90	"

Any variations from above standard list must be distinctly stated in every order, as none but the standard sizes are kept ready made.

ROLLING COULTERS.



Patent Beveled and Ground.

Sizes	12	13	14	15	16	17	18	in.
Price	$1 10	1 25	1 40	1 75	2 00	2 25	2 50	each.
Patent Hubs							30 cents	"

The above Coulter is beveled, ground and polished ready for use, and is now considered the best in the market.

SPRING STEEL.

American Cast.

1¼	to 4	in. wide	by	¼	to ½	in. thick		cents	per pound.
1½	" 2	"		⅛	" 3/16	"		"	"
⅞	" 1⅜	"		⅛	" 3/16	"		"	"
¾	" 3	"		No. 10	to No. 16	Gauge		"	"
¾	" 3	"		17	" 20	"		"	"
¾	" ⅝	"		10	" 16	"		"	"
¾	" ⅝	"		17	" 20	"		"	"
¾	" ⅝	"		21	" 24	"		"	"
Spiral and Taper Steel								"	"
Spring Circles								"	"

Cut to specified lengths, ½ cent per pound extra.

Chrome Cast.

Ordinary Sizes, for Railroad use ..... cents per pound.

English Cast.

Ordinary Sizes, best brands ..... cents per pound.

American German.

1½	to 4	in. wide	by	7/32	to ⅜	in. thick		cents	per pound.
1⅛	" 1⅜	"		7/32	and ¼	"		"	"
1⅛		"		3/16	" ¼	"		"	"
2½		"		3/16		"		"	"
⅞	and 1	"		3/16	to ¼			"	"
1		"		⅜		"		"	"
1⅛	to 3	"		⅛	and 5/32	"		"	"
⅞	and 1	"		⅛	" 5/32	"		"	"
¾		"		⅛	to 3/16	"		"	"

Cut to specified lengths, ½ cent per pound extra.

English German.

1¼	to 6	in. wide	by	3/16	to ½	in. thick		cents	per pound.
1	" 1⅛	"		3/16	and ¼	"		"	"
1		"		⅛		"		"	"
¾	and ⅞	"		⅛, 3/16,	and ¼	in. thick		"	"

American Swedes.

Spring Steel ..... cents per pound.

English Swedes.

Spring Steel	cents	per pound.
Spring Steel for Baby Carriages	"	"

BESSEMER TIRE STEEL.

½,	⅝,	¾,	⅞,	and 1	in. wide by	⅛	in. thick	12	cents per pound.
⅝,	¾,	⅞,	1,	" 1⅛	"	3/16	"	11	" "
⅝,	¾,	⅞,	1,	1⅛, " 1¼	"	¼	"	10	" "
⅞,	1,	1⅛,	1¼,	" 1⅜	"	5/16	"	10	" "
⅞,	1,	1⅛,	1¼,	1⅜, " 1½	"	⅜	"	10	" "

GERMAN TIRE STEEL.

⅝	and ¾	in. wide by	⅛	in. thick		cents per pound.
⅞	" 1	"	⅛	"		" "
¾		"	3/16	"		" "
⅞	" 1	"	3/16	"		" "
⅞		"	¼	"		" "
1	to 1½	"	¼	and 5/16	in. thick	" "

CAST TIRE STEEL.

⅝	and ¾	in. wide by	⅛	in. thick		cents per pound.
⅞	" 1	"	⅛	"		" "
¾		"	3/16	"		" "
⅞	" 1	"	3/16	"		" "
⅞		"	¼	"		" "
1	to 1½	"	¼	and 5/16	in. thick	" "

SHEET STEEL.

First Quality	Cast Steel,	Nos.	10 to 16		cents per pound.
"	" "		17 " 20		" "
"	" "		21 " 24		" "
Second "	" "		10 " 16		" "
"	" "		17 " 20		" "
"	" "		21 " 24		" "
Third "	" "		10 " 16		" "
"	" "		17 " 20		" "
"	" "		21 " 24		" "
Decarbonized	"		10 " 16		" "
"	"		17 " 20		" "
"	"		21 " 24		" "

Cast Steel for Shovels		cents per pound.
German "	"	" "

WELDING STEEL.

English Blister, best brands, all sizes		cents per pound.
German Hammered or Lay,	"	" "

TOE CALK STEEL.

½ to ⅞ in. wide by ⅜ to ½ in. thick,	German	cents per pound.
½ " ⅞ " " ⅜ " ½ "	Swedish	" "

SLEIGH SHOE STEEL.

¾ to 4 in. wide by $\frac{5}{16}$ to ½ in. thick,	American	cents per pound.
¾ " 4 " " $\frac{5}{16}$ " ½ "	English	" "
¾ " 4 " " $\frac{5}{16}$ " ½ "	Bessemer	" "

CUTTER SHOE STEEL.

½ to 1 in. wide by ⅜ to ½ in. thick,	American	cents per pound.
½ " 1 " " ⅜ " ½ "	English	" "
½ " 1 " " ⅜ " ½ "	Bessemer	" "

STEEL CUTTER SHOES.

Finished to shape, all sizes ..... cents per pound.

MISCELLANEOUS STEEL.

Rivet Cast Steel	cents per pound.
Pick " plain	" "
" " beveled	" "
Mattock Cast Steel, plain	" "
" " beveled	" "
Welding "	" "
Coal Wedge "	" "
Hammer " ordinary sizes	" "
Spindle and Roller Cast Steel	" "
Augur and Augur Bit Cast Steel	" "
Table Cutlery "	" "
Wagon Axle "	" "
Pivot Steel, for Scales	" "
Feather Steel	" "
Plug "	" "
Oil Well Reamers	" "
" Bits	" "
" Jar Quarters	" "
" " Halves	" "
Still Bottom Plates	" "

DECARBONIZED CAST STEEL.

Flats, ordinary sizes	cents per pound.
Rounds, " "	" "

AGRICULTURAL IMPLEMENT CAST STEEL.

	cents per pound.
Reaper and Scythe	" "
Sickle	" "
Blank Section	" "
Fork and Rake	" "
Horse Rake Teeth, to length	" "
" " " in sets to pattern	" "
Finger Bar	" "
Cutter Bars Cast Steel	" "
" " German Spring Steel	" "
Corn Stalk Cutter, beveled to length	" "
Planters' Hoe Cast Steel	" "
Hoe Cast Steel	" "

FILE CAST STEEL.

		cents per pound.
Flat, Round and Square, 8 in. and over		" "
Half Round and Bastard, 8 in. "		" "
Flat and Round, 7 in.	advance	1 " "
" " 6	"	2 " "
" " 5	"	3 " "
" " 4	"	4 " "
" " 3	"	5 " "
Mill Saw, 8 in. and over		" "
" " 7 "	advance	1 " "
" " 6 "	"	2 " "
" " 5 "	"	3 " "
" " 4 "	"	4 " "
" " 3 "	"	5 " "
Taper, 4 in. and over		" "
" 3½ "	advance	2 " "
" 3 "	"	4 " "
Horse Rasp Cast Steel		" "
" " German Steel		" "

CIRCULAR SAW PLATES.

	cents per pound.
46 in. diameter and under	" "
48 "	" "
50 "	" "
52 to 54 in. diameter	" "
56 to 60 "	" "
62 to 64 "	" "
66 to 70 "	" "
72 in. diameter	" "

LONG SAW PLATES.

				cents per pound.
Mulay	to No. 7	Wire	Gauge	" "
Mill	" 7	"	"	" "
Gang	" 12	"	"	" "
Drag, same Gauge back and front,	" 12	"	"	" "
" different " " " "	" 12	"	"	" "
Cross Cut (trimmed), best quality				" "
" " " regular				" "

HOMOGENEOUS STEEL.

PATENT ROLLED.

Boiler Plate, not less than $\frac{3}{16}$ in. thick	cents per pound.	
Fire Box, " " "	"	"
Flue Plate, " " "	"	"
Boiler Plate, not less than $\frac{1}{8}$ in. thick	"	"
Fire Box, " " "	"	"
Flue Plate, " " "	"	"
Circular Plates	"	"
Semi-Circular Plates	"	"
Smoke Stack, to shape	"	"
Rivet Steel	"	"
Steel Rivets	"	"

MISCELLANEOUS STEEL FORGINGS.

Locomotive Axles	cents per pound.	
Car "	"	"
Car Axles, rough turned	"	"
Slide Bars, plain	"	"
" tapered	"	"
Valve and Pump Rods	"	"
Crank Pins, plain	"	"
" forged and cut to lengths	"	"
Piston Rods	"	"
Connecting Rods	"	"
Frog Points and Heel Plates	"	"
" Side Bars	"	"

CYLINDER TEETH.

For Threshing Machines ..... cents per pound.

STEEL PLOW BEAMS.

Bessemer ..... $4 00 each.

AMERICAN CAST STEEL.

Classification.

FLAT BAR—ORDINARY SIZES.

½ in.	wide by $\frac{5}{16}$ in. thick and over			cents per pound.
⅝	" ¼ " "			" "
¾, ⅞ and 1 in.	" $\frac{3}{16}$ " "			" "
1⅛ to 2 in.	" ⅛ " "			" "
2¼ in.	" ⅛ to 1¾ in. thick			" "
2½	" ⅛ " 1½ "			" "
2¾	" ⅛ " 1⅜ "			" "
3	" ⅛ " 1¼ "			" "
3½	" ⅛ " 1⅛ "			" "
4	" ⅛ " 1 "			" "
4½	" ⅛ " ⅞ "			" "
5	" ⅛ " ¾ "			" "
6	" ⅛ " ⅝ "			" "

SQUARES, ROUNDS AND OCTAGONS—ORDINARY SIZES.

⅜ to 2 in. diameter,	Squares	cents per pound.
⅜ " 2 "	Octagons	" "
⅜ " 2 "	Rounds	" "

FLAT BAR—EXTRA SIZES.

¼ in. wide by ⅛ in. thick	advance	11	cents per pound.	
⅜ " ⅛ "	"	4	" "	
⅜ " ¼ "	"	1	" "	
½ " ⅛ "	"	2	" "	
½ " $\frac{3}{16}$ and ¼ "	"	1	" "	
⅝ " ⅛ "	"	2	" "	
⅝ " $\frac{3}{16}$ "	"	1	" "	
¾, ⅞ and 1 in. wide by ⅛ in. thick	"	1	" "	
2½ in. wide by 1⅝ in. thick and over	"	1	" "	
2¾ " 1½ " " "	"	1	" "	
3 " 1⅜ " " "	"	1	" "	
3½ " 1¼ to 2½ in. thick	"	1	" "	
4 " 1⅛ " 2¼ "	"	1	" "	
4 " 2½ " 3¾ "	"	2	" "	
4½ " 1 " 2 "	"	1	" "	
4½ " 2¼ " 3½ "	"	2	" "	
5 " ⅞ " 1¾ "	"	1	" "	
5 " 2 " 3 "	"	2	" "	
6 " ¾ " 1½ "	"	1	" "	
6 " 1¾ " 2½ "	"	2	" "	

SQUARE BAR—EXTRA SIZES.

Square,	⅛	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{7}{32}$	¼	$\frac{5}{16}$	2⅛ to 3	3⅛ to 4	4½ inches.
Advance	19	11	6	3	2	1	1	2	3 cents per pound.

ROUND BAR—EXTRA SIZES.

Round,	⅛	$\frac{5}{32}$	$\frac{3}{16}$	$\frac{7}{32}$	¼	$\frac{5}{16}$	2⅛ to 3	3⅛ to 3½	3⅝ to 4 inches.
Advance	14	11	7	3	2	1	1	2½	3½ cents per pound.

AMERICAN CAST STEEL.

Single and Double Shear Steel, ordinary sizes				cents	per pound.
Nailers' Knife	"	"	"	"	"
Soft Center Tap	"	"	"	"	"
Die	"	"	"	"	"
Mill Pick and Drill	"	"	"	"	"

PLANISHED STEEL.

Clock Spring Steel	cents	per pound.
Corset Stay "	"	"
Keg "	"	"

Above not exceeding 4 in. in width, and of any gauge.

MACHINERY CAST STEEL.

3/8 to 2 in. round inclusive, ordinary sizes					cents	per pound.	
5/16 and 2 1/8 in. to 3 in. round inclusive				advance 1	"	"	
1/4 " 3 1/8 " 4	"	"		" 3	"	"	
7/32 " 4 1/8 " 5	"	"		" 5	"	"	
3/16 " 5 1/8 " 6	"	"		" 8	"	"	
5/32 in.	"	"		" 14	"	"	

Cut to specified Lengths, 1/2 cent per pound extra.

SAFE CAST STEEL.

2 to 5 7/8 wide by 1/4 to 3/8 in. thick, Iron Side and Center								cents	per pound.	
6 " 13 " 1/4 " 3/8 " " " "								"	"	
13 1/8 " 18 " 1/4 " 3/8 " " " "								"	"	
2 " 5 7/8 " 1/4 " 3/8 " Soft Steel Side								"	"	
6 " 13 " 1/4 " 3/8 " " " "								"	"	
13 1/8 " 18 " 1/4 " 3/8 " " " "								"	"	
2 " 5 7/8 " 1/4 " 3/8 " " Center								"	"	
6 " 13 " 1/4 " 3/8 " " " "								"	"	
13 1/8 " 18 " 1/4 " 3/8 " " " "								"	"	
Conical Bolt Steel, round								"	"	
Cast Steel Sledge Moulds								"	"	
Iron Sledge Moulds								"	"	
Hammered Iron Shovel Plow Moulds								"	"	

CAST STEEL FORGINGS FURNISHED TO ORDER.

ENGLISH CAST STEEL.

SANDERSON BROS. & CO'S MANUFACTURE.

FLAT BAR—ORDINARY SIZES.

½ in.	wide by	5/16	in. thick and over			cents per pound.	
⅝	"	¼	"	"		"	"
¾, ⅞ and 1 in.	"	3/16	"	"		"	"
1⅛ to 2 in.	"	⅛	"	"		"	"
2¼ in.	"	⅛	to 1¾	in. thick		"	"
2½	"	⅛	" 1½	"		"	"
2¾	"	⅛	" 1⅜	"		"	"
3	"	⅛	" 1¼	"		"	"
3½	"	⅛	" 1⅛	"		"	"
4	"	⅛	" 1	"		"	"
4½	"	⅛	" ⅞	"		"	"
5	"	⅛	" ¾	"		"	"
6	"	⅛	" ⅝	"		"	"

SQUARES, ROUNDS AND OCTAGONS—ORDINARY SIZES.

⅜ to 2 in. diameter,	Squares	cents per pound.
⅜ " 2 "	Octagons	" "
⅜ " 2 "	Rounds	" "

FLAT BAR—EXTRA SIZES.

¼ in. wide by	⅛	in. thick	advance	11	cents per pound.	
⅜ "	⅛	"	"	4	"	"
⅜ "	¼	"	"	1	"	"
½ "	⅛	"	"	2	"	"
½ "	3/16 and ¼	"	"	1	"	"
⅝ "	⅛	"	"	2	"	"
⅝ "	3/16	"	"	1	"	"
¾, ⅞ and 1 in. wide by	⅛	in. thick	"	1	"	"
2½ in. wide by	1⅝	in. thick and over	"	1	"	"
2¾ "	1½	" "	"	1	"	"
3 "	1⅜	" "	"	1	"	"
3½ "	1¼	to 2½ in. thick	"	1	"	"
4 "	1⅛	" 2¼ "	"	1	"	"
4 "	2½	" 3¾ "	"	2	"	"
4½ "	1	" 2 "	"	1	"	"
4½ "	2¼	" 3½ "	"	2	"	"
5 "	⅞	" 1¾ "	"	1	"	"
5 "	2	" 3 "	"	2	"	"
6 "	¾	" 1½ "	"	1	"	"
6 "	1¾	" 2½ "	"	2	"	"

SQUARE BAR—EXTRA SIZES.

Square,	⅛	5/32	3/16	7/32	¼	5/16	2⅛ to 3	3⅛ to 4	4½ in.
Advance,	19	11	6	3	2	1	1	2	3 cents per pound.

ROUND BAR—EXTRA SIZES.

Round,	⅛	5/32	3/16	7/32	¼	5/16	2⅛ to 3	3⅛ to 3½	3⅝ to 4 in.
Advance,	14	11	7	3	2	1	1	2½	3½ cents per pound.

CHROME CAST STEEL.

Classification.

FLAT BAR—ORDINARY SIZES.

½ in.	wide by	5/16 in.	thick and over	cents per pound.
⅝	"	¼	" "	" "
¾, ⅞ and 1 in.	"	5/16	" "	" "
1⅛ to 2 in.	"	⅛	" "	" "
2¼ in.	"	⅛ to 1¾ in.	thick and over	" "
2½	"	⅛ " 1½	" "	" "
2¾	"	⅛ " 1¼	" "	" "
3	"	⅛ " 1¼	"	" "
3½	"	⅛ " 1⅛	"	" "
4	"	⅛ " 1	"	" "
4½	"	⅛ " ⅞	"	" "
5	"	⅛ " ¾	"	" "
6	"	⅛ " ⅝	"	" "

SQUARES, ROUNDS AND OCTAGONS—ORDINARY SIZES.

⅜ to 2 in. diameter,	Squares and Octagons	cents per pound.
⅜ " 2 "	Rounds	" "

FLAT BAR—EXTRA SIZES.

¼ in.	wide by	⅛ in.	thick	advance 13	cents per pound.
⅜	"	⅛	"	" 8	" "
⅜	"	¼	"	" 5	" "
½	"	⅛	"	" 5	" "
½	"	3/16 to ¼	in. thick	" 3	" "
⅝	"	⅛	in. thick	" 3	" "
⅝	"	3/16	"	" 2	" "
¾, ⅞ and 1 in.	"	⅛	"	" 2	" "
2½ in.	"	1⅝	" and over	" 1	" "
2¾	"	1⅛	" "	" 2	" "
3	"	1⅜	" "	" 2	" "
3½	"	1¼ to 3¼	in. thick	" 2	" "
4	"	1⅛ " 2¼	"	" 2	" "
4	"	2½ " 3¾	"	" 2	" "
4½	"	1 " 2	"	" 2	" "
4½	"	2¼ " 4¼	"	" 2	" "
5	"	⅞ " 1¾	"	" 2	" "
5	"	2 " 4	"	" 2	" "
6	"	¾ " 1½	"	" 2	" "
6	"	1½ " 3	"	" 2	" "

SQUARES, ROUNDS AND OCTAGONS—EXTRA SIZES.

DIAMETER.		PER POUND.	DIAMETER.		PER POUND.
⅛ in.	advance	23 cents.	5/16 in.	advance	2 cents.
5/32	"	15 "	2⅛ to 3	"	2 "
3/16	"	8 "	3⅛ " 4	"	3 "
7/32	"	5 "	4⅛ " 5	"	4 "
¼	"	3 "	5⅛ " 6	"	5 "

CHROME CAST STEEL.

PRICE LIST.

	PER POUND.
Grade No. 1, Extra — for choice Tools of all descriptions	cents.
Grade No. 1, High — for Turning, Planing, and Tools required to cut hard substances, as Chilled Cast Iron, etc.	"
Grade No. 2 — for Taps, Dies, Punches, Jewelers' and other rolls, etc.	"
Grade No. 3 — for all kinds of Fine Edge Tools, Chipping Chisels, Rock Drills, and all ordinary Turning, Planing and Machine Shop Tools — termed a Universal Grade	"
Grade No. 3, A — for Heavy Dies and best quality of Hammers; milder than No. 3, and for some purposes preferable	"
Best Warranted Spring Cutlery Cast Steel	"
" " Axe Temper "	"
Round Machinery "	"
Hammer "	"
Table Cutlery "	"
Rake and Fork "	"
Hoe "	"
Plow "	"
Skate "	"
Spring "	"
Tire "	"
Agricultural Implement "	"
File "	"
Gun, or Homogeneous "	"
Safe "	"
Piston Rods "	"
Axles for Locomotives "	"
Frog Points, Plates and Side Bars "	"
Locomotive Tires Crucible "	"
Round Safe Steel and Iron Welded, for Conical Bolts	"

Warranted of the finest quality, and equal to any imported.

NOTICE.

When ordering Chrome Cast Steel, be sure and give the grade and number, and for what purpose you desire it.

CHROME CAST STEEL.

TREATMENT.

FORGING.— For Forging, it may be heated to almost a white heat without fear of injury — in fact, it is desirable that it be worked at a high heat. Grades 2 and 3 are preferable for welding purposes, as they may be welded to themselves or to iron without fear of injuring the quality of the steel.

TEMPERING.— For Tempering, the steel should be dipped at a low red heat, as seen in the shade. All tools forged from a large body to a small edge should be allowed to cool off after forging, and be re-heated for tempering. The reason for this is, that the interior of the tool retains the heat at which it was forged sometime after the exterior surface has become cool, and is still too hot for tempering, and if then put into the water or other cooling preparation, is liable to crack.

ANNEALING.— For Annealing, heat the steel uniformly in all its parts to a low red heat, and cover up well in any of the usual annealing substances.

Special Notice.

Harden at the *lowest heat* at which the steel will take temper. Tools made from this steel can only be spoiled by *dipping when too hot* into water or other hardening substances.

Particular Notice.

It is absolutely essential to successfully use *Chrome Cast Steel* that it should be hardened at the lowest heat it will take temper (a low cherry red in the shade), and we request all purchasers to conform literally to these instructions. If by any misfortune the steel is cracked in tempering, it can be restored by hammering at a welding heat, and re-tempering at the proper heat.

CHROME CAST STEEL has properties peculiar to itself and advantages entirely its own, and is especially adapted for tools of all kinds. It can be worked at a white heat like iron, and worked as easily as iron, and cannot be destroyed by over-heating. It can be welded to iron or to itself without leaving any trace of the weld; and when made into a tool, and *tempered* according to the instructions given above, will do at least fifty per cent. more work than any other steel, not excepting the highest priced foreign brands.

How to Order.

When ordering Chrome Cast Steel, be sure and give the *grade and number*, and for what purpose you desire it.

WEIGHT OF STEEL.

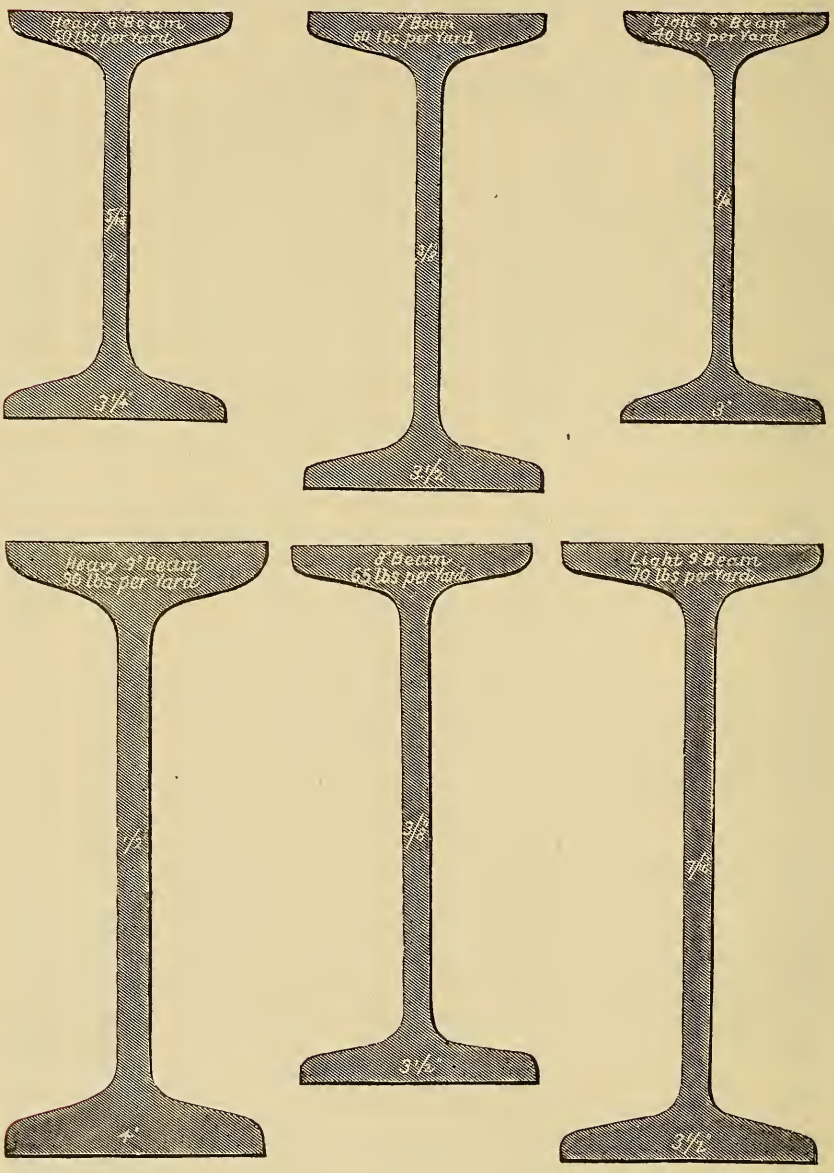
ONE FOOT IN LENGTH.

Square,	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	in.
Weight,	.213	.479	.855	.133	1.91	2.61	3.40	4.34	5.32	6.44	7.67	9.00	10.14	lbs.
Round,	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	in.
Weight,	.167	.376	.669	1.04	1.50	2.05	2.67	3.38	4.18	5.06	6.02	7.07	8.20	lbs.

FLAT STEEL.

Width.	Thickness in Fractions of an Inch.						
	1/16	1/8	3/16	1/4	5/16	3/8	7/16
1/2 in.	.105	.211	.316	.422	.527	.634	.738
5/8	.132	.264	.396	.528	.66	.792	.924
3/4	.158	.316	.474	.633	.791	.95	1.107
7/8	.184	.369	.553	.738	.922	1.108	1.291
1	.211	.422	.633	.845	1.056	1.267	1.478
1 1/8	.237	.475	.712	.95	1.187	1.425	1.662
1 1/4	.264	.528	.792	1.056	1.32	1.584	1.848
1 3/8	.29	.58	.87	1.161	1.451	1.742	2.031
1 1/2	.316	.633	.949	1.266	1.582	1.9	2.215
1 5/8	.343	.686	1.029	1.372	1.715	2.059	2.401
1 3/4	.369	.739	1.108	1.479	1.848	2.218	2.587
1 7/8	.396	.792	1.188	1.584	1.98	2.376	2.772
2	.422	.845	1.267	1.689	2.111	2.534	2.956
2 1/8	.449	.898	1.347	1.795	2.244	2.693	3.142
2 1/4	.475	.95	1.425	1.9	2.375	2.851	3.325
2 3/8	.501	1.003	1.504	2.006	2.507	3.009	3.51
2 1/2	.528	1.056	1.584	2.112	2.64	3.168	3.696
2 5/8	.554	1.109	1.663	2.218	2.772	3.327	3.881
2 3/4	.581	1.162	1.743	2.323	2.904	3.485	4.066
2 7/8	.607	1.215	1.822	2.429	3.036	3.644	4.251
3	.633	1.267	1.9	2.535	3.168	3.802	4.435
3 1/4	.686	1.373	2.059	2.746	3.432	4.119	4.805
3 1/2	.739	1.479	2.218	2.957	3.696	4.436	5.175
3 3/4	.792	1.584	2.376	3.168	3.96	4.752	5.544
4	.845	1.69	2.535	3.38	4.225	5.07	5.915
4 1/4	.897	1.795	2.692	3.591	4.488	5.386	6.283
4 1/2	.95	1.901	2.851	3.802	4.752	5.703	6.653
4 3/4	1.003	2.006	3.009	4.013	5.016	6.019	7.022
5	1.056	2.112	3.168	4.224	5.28	6.336	7.392
5 1/4	1.109	2.218	3.327	4.436	5.545	6.654	7.763
5 1/2	1.162	2.323	3.485	4.648	5.809	6.97	8.132
5 3/4	1.214	2.429	3.643	4.858	6.072	7.287	8.501
6	1.267	2.534	3.802	5.069	6.336	7.604	8.871
6 1/4	1.32	2.64	3.96	5.28	6.6	7.92	9.24
6 1/2	1.373	2.745	4.119	5.491	6.864	8.237	9.61
6 3/4	1.426	2.851	4.277	5.703	7.128	8.554	9.98
7	1.478	2.957	4.435	5.914	7.392	8.871	10.349
7 1/2	1.584	3.168	4.752	6.336	7.92	9.504	11.088
8	1.69	3.379	5.069	6.759	8.448	10.138	11.827
8 1/2	1.795	3.59	5.386	7.181	8.976	10.771	12.567
9	1.901	3.801	5.703	7.603	9.504	11.405	13.306
9 1/2	2.006	4.013	6.019	8.026	10.032	12.039	14.046
10	2.112	4.224	6.336	8.448	10.56	12.673	14.785
10 1/2	2.218	4.436	6.653	8.871	11.088	13.306	15.524
11	2.323	4.646	6.97	9.293	11.616	13.94	16.263
11 1/2	2.429	4.858	7.287	9.716	12.144	14.573	17.002
12	2.534	5.069	7.603	10.138	12.672	15.207	17.741

IRON BEAMS.


Heavy 6 Beams
80 lbs per Yard.
6"
5 1/2"
7 Beams
80 lbs per Yard.
7"
5 1/2"
Light 6 Beams
70 lbs per Yard.
6"
5"
Heavy 9 Beams
70 lbs per Yard.
9"
7"
8 Beams
65 lbs per Yard.
8"
5 1/2"
Light 9 Beams
70 lbs per Yard.
9"
7"
5 1/2"

WROUGHT IRON BEAMS.

UNION IRON COMPANY'S STANDARD LIST.

I-*Beams.*

Sizes.	Weight per Foot.	Price per Pound.						
		20 ft. and under.	20 ft. to 25 ft.	25 ft. to 30 ft.	30 ft. to 35 ft.	35 ft. to 40 ft.	40 ft. to 45 ft.	45 ft. to 50 ft.
4 in.	10 pounds.	6	6	6	6¼	6½	6¾	Special.
5 "	10 "	6	6	6	6¼	6½	6¾	"
6 Light	13⅓ "	6	6	6	6¼	6½	6¾	"
6 Heavy	16⅔ "	6	6	6	6¼	6½	6¾	"
7 "	20 "	6	6	6	6¼	6½	6¾	"
8 "	21⅔ "	6	6	6	6¼	6½	6¾	"
9 Light	23⅓ "	6	6	6	6¼	6½	6¾	"
9 Heavy	30 "	6	6	6	6¼	6½	6¾	"
10½ Light	30 "	6	6	6	6¼	6½	6¾	"
10½ Heavy	35 "	6	6	6	6¼	6½	6¾	"
12¼ Light	41⅔ "	6¼	6¼	6½	6¾	7	Special.	"
12¼ Heavy	60 "	6¼	6¼	6½	6¾	7	"	"
15 Light	50 "	6½	6¾	7	Special.	Special.	"	"
15 Heavy	66⅔ "	6½	6¾	7	"	"	"	"

Bridge Beams.

10 in.	41⅔ pounds.	6¼	6¼	6½	6¾	7	Special.	Special.

Deck Beams.

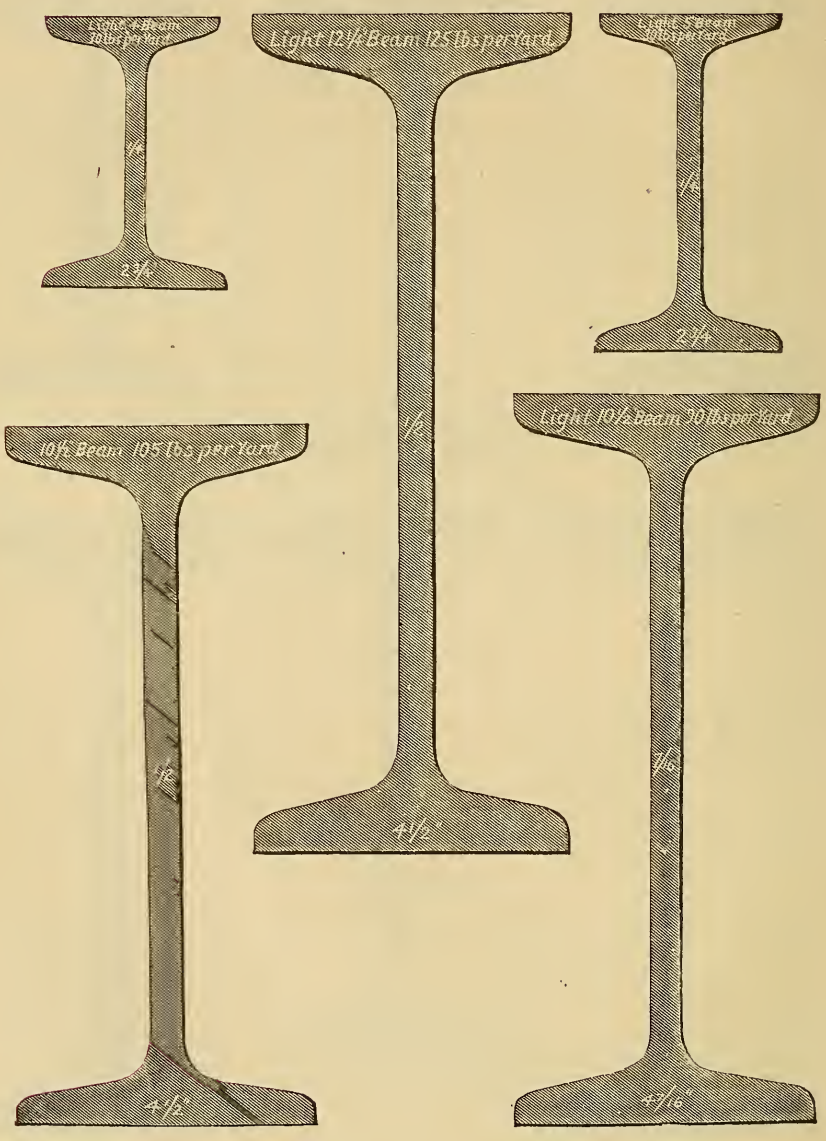
5 in.	11 pounds.	6	6	6	6¼	6½	6¾	Special.
6 "	16⅔ "	6	6	6	6¼	6½	6¾	"
7 "	19 "	6	6	6	6¼	6½	6¾	"
8 "	21⅔ "	6	6	6	6¼	6½	6¾	"
9 "	23⅓ "	6	6	6	6¼	6½	6¾	"
10 "								

V-*Beams.*

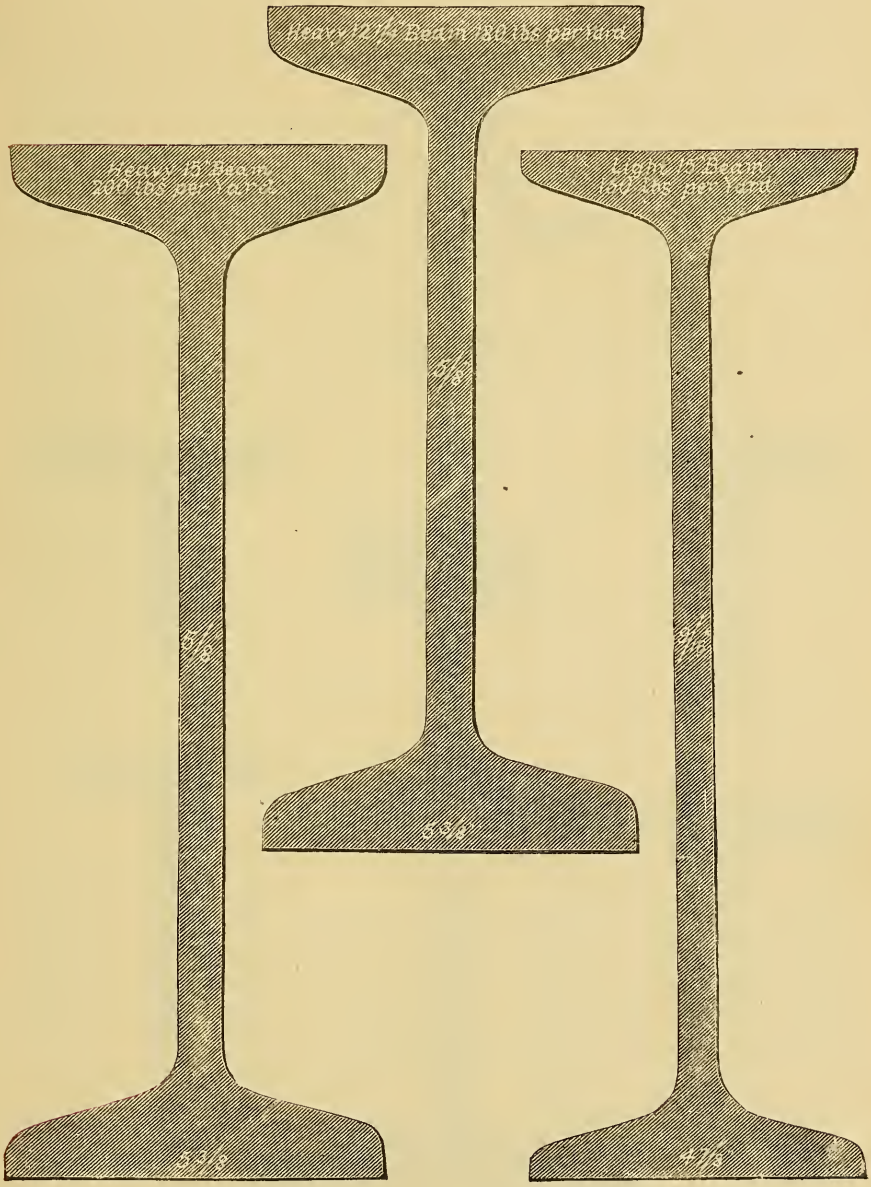
5 in.	6⅔ pounds.	6	6	6	6¼	6½	6¾	Special.

Fitting Beams	¼ cent per pound.
Drilling "	¼ " "
For Drilling and Plain Fitting on the same Beam	⅜ " "
Wrought Iron Fittings	10 " "
Cast Separators	5 " "
Painting	1/10 " "

IRON BEAMS.

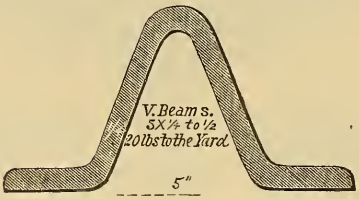

Light 12½ Beam 125 lbs per yard
Light 10½ Beam 105 lbs per yard
Light 10½ Beam 30 lbs per yard

IRON BEAMS.

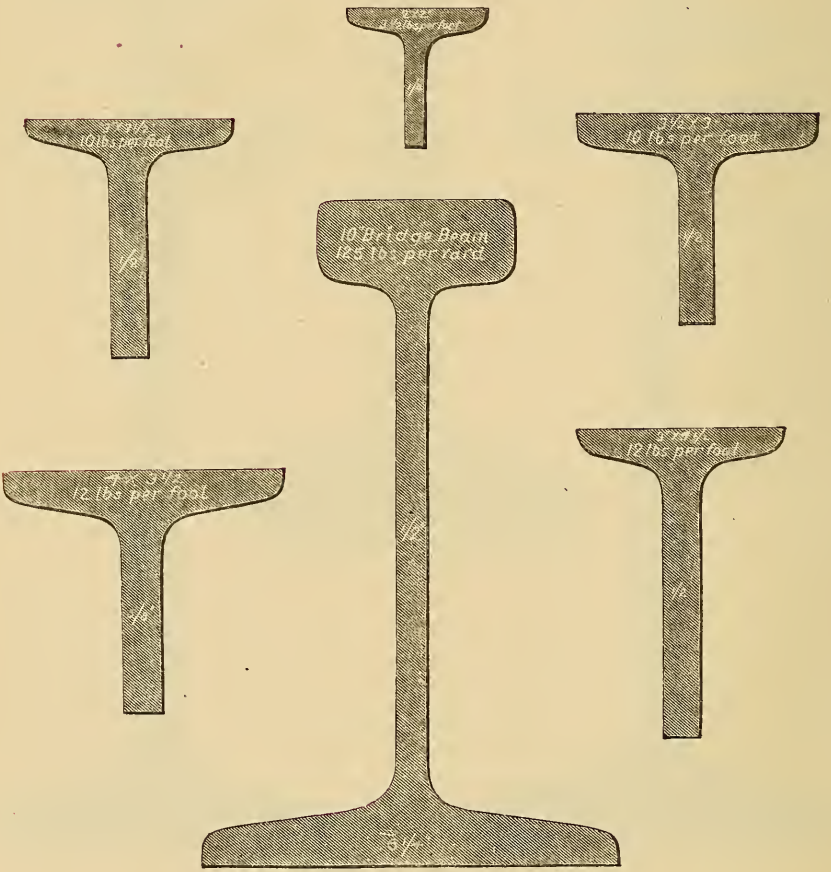

Heavy 12 1/2" Beam 180 lbs per foot
Heavy 15 Beam
240 lbs per foot
Light 15 Beam
150 lbs per foot
5 1/8
5 1/8
5 1/8
5 1/8
5 1/8
5 1/8

BRIDGE BEAMS,

V BEAMS AND T IRONS.



V. Iron for Bridge Struts.



T-IRON.

Dimensions.	Weight per Foot.	Ordinary Lengths.	Price.
INCHES.	POUNDS.	FEET.	CENTS.
$2\frac{1}{8} \times 1\frac{3}{16} \times \frac{3}{16}$	$2\frac{1}{6}$	20	
$2 \times 2 \times \frac{1}{4}$	$3\frac{1}{2}$	25	
$2\frac{1}{2} \times 2\frac{1}{2} \times \frac{5}{16}$	$4\frac{3}{4}$	25	
$2\frac{1}{2} \times 2\frac{1}{2} \times \frac{3}{8}$	$5\frac{1}{3}$	25	
$2\frac{1}{2} \times 2\frac{3}{4} \times \frac{3}{8}$	6	25	
$3 \times 3 \times \frac{5}{16}$	$5\frac{1}{2}$	25	
$3 \times 3 \times \frac{3}{8}$	$6\frac{1}{3}$	25	
$3 \times 3 \times \frac{7}{16}$	7	25	
$3 \times 3\frac{1}{2} \times \frac{1}{2}$	10	25	
$3 \times 3\frac{3}{4} \times \frac{1}{2}$	$10\frac{2}{3}$	25	
$3 \times 4\frac{1}{2} \times \frac{1}{2}$	12	25	
$3\frac{1}{8} \times 2\frac{3}{4} \times \frac{1}{2}$	$9\frac{1}{2}$	25	
$3\frac{1}{2} \times 3 \times \frac{1}{2}$	10	25	
$3\frac{1}{2} \times 3\frac{1}{2} \times \frac{1}{2}$	$9\frac{1}{2}$	25	
$4 \times 2 \times \frac{1}{4}$	$5\frac{1}{2}$	25	
$4 \times 3\frac{1}{2} \times \frac{1}{2}$	12	25	
$4 \times 3\frac{3}{4} \times \frac{7}{8}$	$16\frac{2}{3}$	25	
$4 \times 4 \times \frac{1}{2}$	$13\frac{1}{3}$	25	
$5 \times 2\frac{3}{8} \times \frac{3}{8}$	$9\frac{2}{3}$	25	
$5 \times 2\frac{3}{4} \times \frac{9}{16}$	$11\frac{2}{3}$	25	

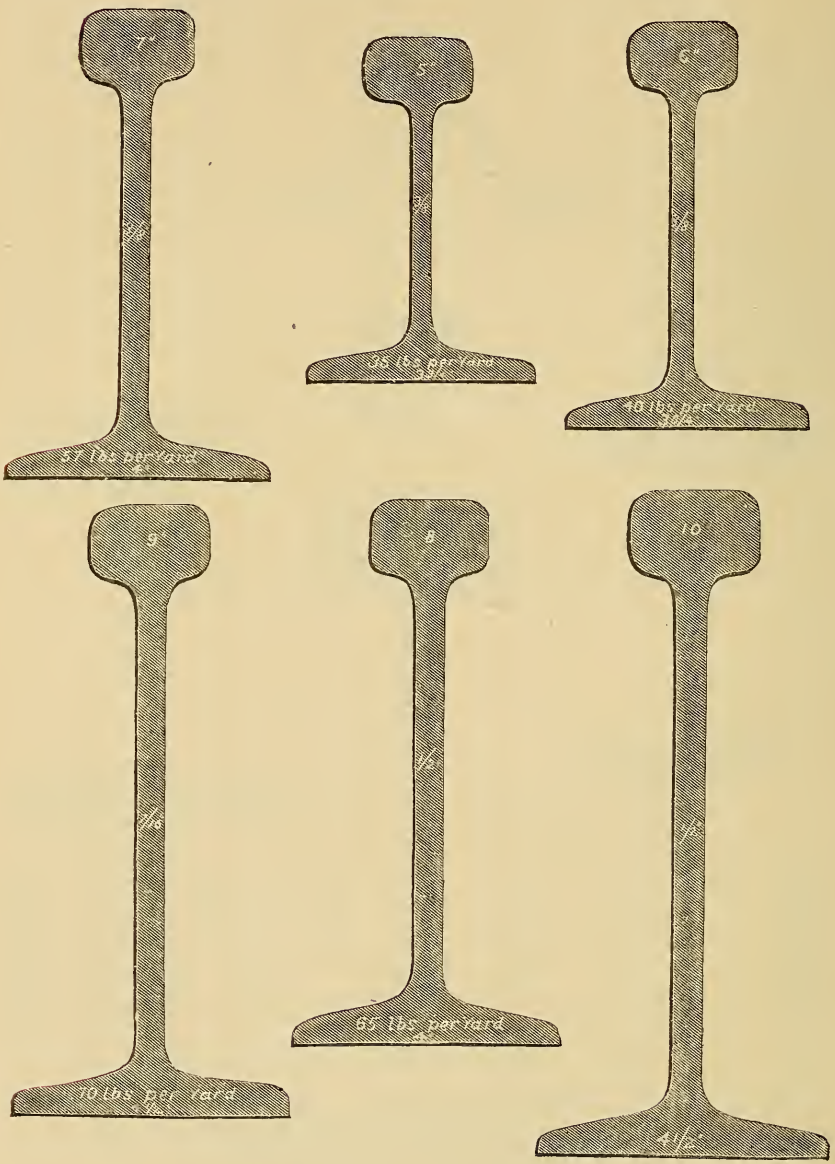
TABLE OF STRENGTH

OF

Union Iron Company's Solid Wrought Iron Beams.

	Height of Beam, Feet.	Weight per Foot, Pounds.	Area of Section.	Safe Load Uniformly Distributed. In Tons of 2,000 Pounds.					
				5′	10′	15′	20′	25′	30′
Heavy	15	$66\frac{2}{3}$	19.77	73.45	35.82	22.89	16.33	12.51	9.94
Light	15	50	14.83	48.22	23.99	15.34	10.94	8.38	6.66
Heavy	$12\frac{1}{4}$	60	17.79	54.96	26.81	17.04	12.21	8.50	7.32
Light	$12\frac{1}{4}$	$41\frac{2}{3}$	12.46	36.81	17.96	11.61	8.18	5.69	4.90
Heavy	$10\frac{1}{2}$	35	10.37	25.85	12.61	6.95	4.98	3.82	2.99
Light	$10\frac{1}{2}$	30	8.90	18.35	8.95	4.93	3.54	2.71	2.12
Heavy	9	30	8.90	19.33	9.45	6.00	4.30	3.29	2.58
Light	9	$23\frac{1}{3}$	6.92	15.08	7.37	4.68	3.35	2.57	2.01
	8	$21\frac{2}{3}$	6.43	10.95	5.35	3.49	2.44	1.89	----
	7	20	5.93	8.76	4.28	2.79	1.95	----	----
Heavy	6	$16\frac{2}{3}$	4.94	7.01	3.66	2.33	1.67	----	----
Light	6	$13\frac{1}{3}$	3.95	6.17	3.22	2.05	1.47	----	----
	5	10	2.98	3.79	1.85	1.17	----	----	----
	4	10	2.98	3.40	1.66	1.05	----	----	----

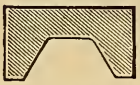
DECK BEAMS.


4"
5"
6"
8"
8"
10"
35 lbs per yard
40 lbs per yard
50 lbs per yard
65 lbs per yard
70 lbs per yard

CHANNEL IRON.

CHANNEL IRON.

½ × ¼ in.



⅝ × ⅜ in.

¾ × ⅜ in.

⅞ × ⅜ in.

1 × ⅜ in.

1¼ × ½ in.

1½ × ½ in.

1¾ × ½ in.

Above cuts are full size.

			cents per pound.
1½, 1¾ and 2 in. wide by ½ in. Flange			
1¼ in. wide by ½ in. Flange	advance	$\frac{2}{10}$	" "
1 " " ⅜ "	"	$\frac{3}{10}$	" "
⅞ " " ⅜ "	"	$\frac{4}{10}$	" "
¾ " " ⅜ "	"	$1\frac{2}{10}$	" "
⅝ " " ⅜ "	"	$1\frac{2}{10}$	" "
½ " " ¼ "	"	$3\frac{2}{10}$	" "

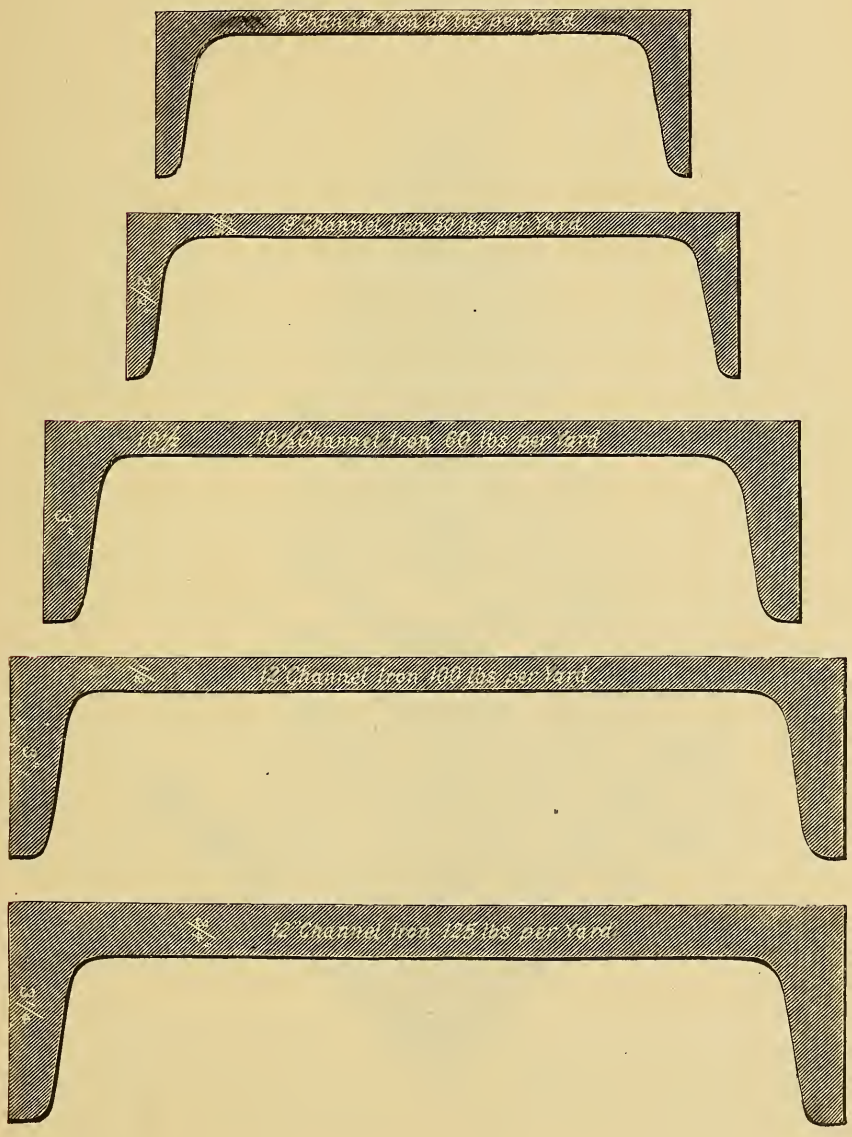
Above sizes of Channel Irons are used for Railings, etc.

HEAVY CHANNEL IRONS.

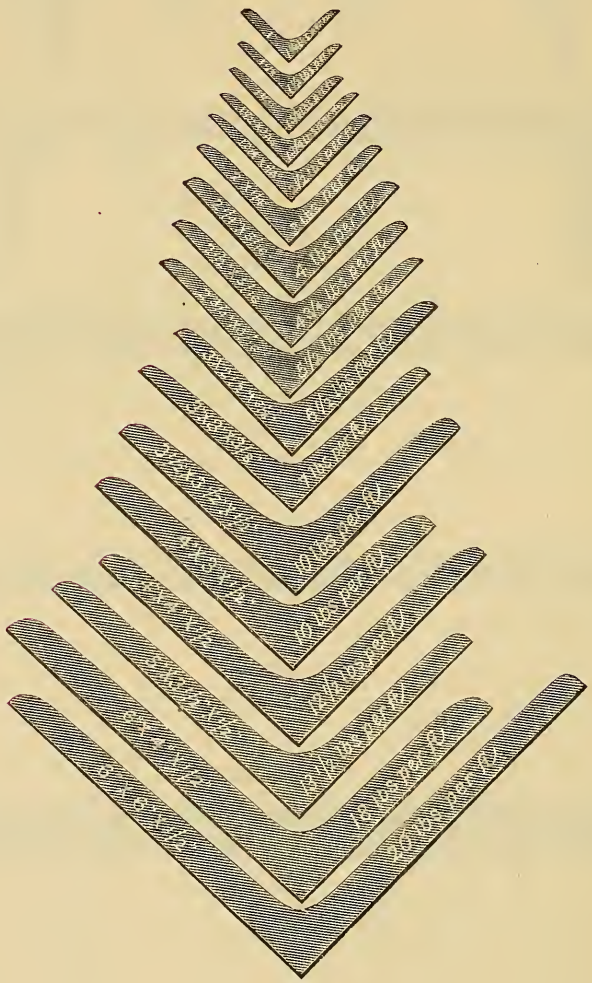
UNION IRON COMPANY'S STANDARD LIST.

Sizes.	Weight Per Foot.	Price per Pound.						
		20 ft. and under.	20 ft. to 25 ft.	25 ft. to 30 ft.	30 ft. to 35 ft.	35 ft. to 40 ft.	40 ft. to 45 ft.	45 ft. to 50 ft.
2 in.	3 pounds.							
3	5 to 6¼ "	6¼	6¼	6¼	6½	6¾	7	Special.
4 Light	5¾ "	6¼	6¼	6¼	6½	6¾	7	"
4 Heavy	7 to 8 "	6¼	6¼	6¼	6½	6¾	7	"
5	6½ "	6¼	6¼	6¼	6½	6¾	7	"
6 Light	7½ "	6¼	6¼	6¼	6½	6¾	7	"
6 Medium	10 "	6¼	6¼	6¼	6½	6¾	7	"
6 Heavy	18⅔ "	6¼	6¼	6¼	6½	6¾	7	"
7½	13⅓ "	6¼	6¼	6¼	6½	6¾	7	"
8	12 "	6¼	6¼	6¼	6½	6¾	7	"
9	16⅔ "	6¼	6¼	6¼	6½	6¾	7	"
10½ Light	16⅔ "	6¼	6¼	6¼	6½	6¾	7	"
10½ Heavy	20 "	6¼	6¼	6¼	6½	6¾	7	"
12 Light	33⅓ "	6½	6½	6¾	7	7¼	Special.	"
12 Heavy	41⅔ "	6½	6½	6¾	7	7¼	"	"

CHANNEL IRONS.


8" Channel Iron 50 lbs per Yard
10" Channel Iron 60 lbs per Yard
12" Channel Iron 100 lbs per Yard
12" Channel Iron 125 lbs per Yard

ANGLE IRON.


3 x 3 x ½
3 x 2½ x ½
3 x 2 x ½
2½ x 2½ x ½
2½ x 2 x ½
2 x 2 x ½
2 x 1½ x ½
1½ x 1½ x ½
1½ x 1¼ x ⅜
1¼ x 1¼ x ⅜
1 x 1 x ⅜
1 x ¾ x ⅜
¾ x ¾ x ⅜
¾ x ¾ x ¼
⅝ x ⅝ x ¼
½ x ½ x ¼
⅜ x ⅜ x ¼

ANGLE IRON.

With Equal Sides.

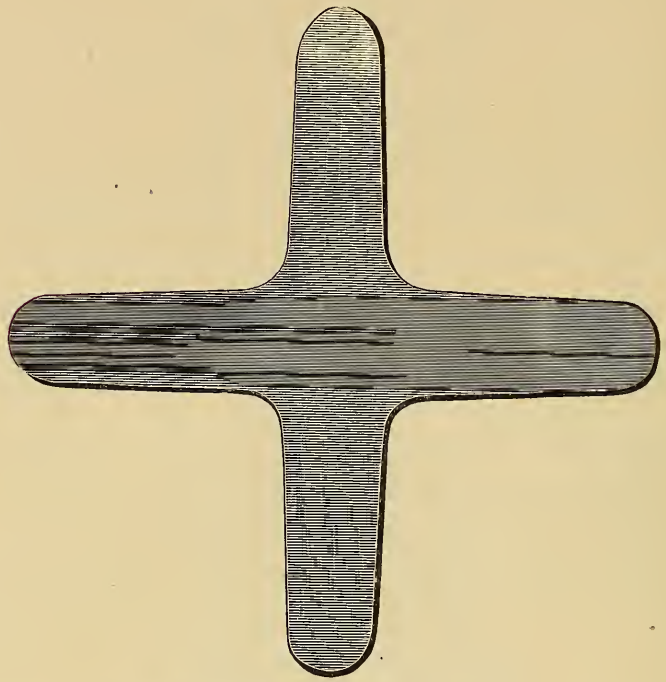
Dimensions.	Weight per Foot.		Ordinary Lengths.	Price.
	Minimum.	Maximum.		
INCHES.	POUNDS.	POUNDS.	FEET.	CENTS.
1 × 1 × 1/8 to 3/16	.8	1 1/4	16	
1 1/8 × 1 1/8 × 1/8 " 3/16	.9	1 1/2	16	
1 1/4 × 1 1/4 × 1/8 " 3/16	1	1 5/8	16	
1 1/2 × 1 1/2 × 5/32 " 1/4	1 1/2	2.3	25	
1 3/4 × 1 3/4 × 3/16 " 5/16	2	3 1/2	25	
2 × 2 × 7/32 " 3/8	3	4 1/2	25	
2 1/4 × 2 1/4 × 5/16 " 7/16	4 1/4	6 1/4	25	
2 1/2 × 2 1/2 × 5/16 " 7/16	5	7	25	
2 3/4 × 2 3/4 × 3/8 " 1/2	6 1/2	8 1/2	25	
3 × 3 × 3/8 " 1/2	7 1/4	9 3/4	25	
3 1/2 × 3 1/2 × 3/8 " 7/16	8 1/2	12	25	
4 × 4 × 7/16 " 9/16	11	15 1/2	25	
6 × 6 × 1/2	20	----	25	

With Unequal Sides.

Dimensions.	Weight per Foot.		Ordinary Lengths.	Price.
	Minimum.	Maximum.		
INCHES.	POUNDS.	POUNDS.	FEET.	CENTS.
2 1/4 × 1 1/2 × 3/16 to 1/4	2 1/2	3	25	
3 × 2 × 1/4 " 5/16	4	5	25	
3 × 2 1/2 × 5/16 " 1/2	5 1/3	8 1/3	25	
3 1/2 × 3 × 3/8 " 9/16	7 2/3	11	25	
4 × 3 × 3/8 " 9/16	8 1/3	12	25	
4 × 3 1/2 × 3/8 " 9/16	9	13	25	
4 1/2 × 3 × 3/8 " 9/16	9	13	25	
5 × 3 × 7/16 " 9/16	10	14	25	
5 × 3 1/2 × 7/16 " 9/16	11 2/3	15	25	
5 × 4 × 7/16 " 5/8	12 1/2	17	25	
6 × 3 1/2 × 3/8 " 9/16	11 1/3	16 2/3	25	
6 × 4 × 7/16 " 5/8	14	19 1/2	25	
6 1/2 × 4 × 7/16 " 5/8	14 2/3	20 2/3	25	

NOTE.— The lengths of the sides of Angle Iron correspond only to the *minimum* thickness given in the table; they increase in length as the thickness approaches the maximum. Orders should therefore specify either the thickness or weight per foot, *but never both.* When thickness is specified, the weights above given are only approximate.

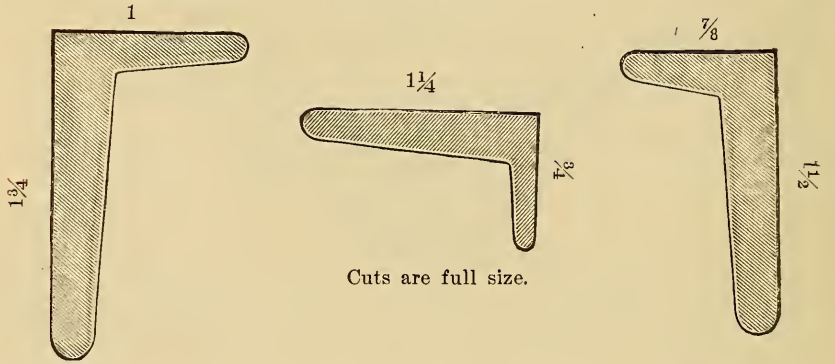
STAR IRON.



For Bridges, and Other Work.

SIZES.	WEIGHT PER FOOT.	PRICE.
1½ in.	2¼ pounds	cents per pound.
2	4¼ "	" "
2¼	5 "	" "
2½	6¼ "	" "
3	8 "	" "
3½	10¼ "	" "

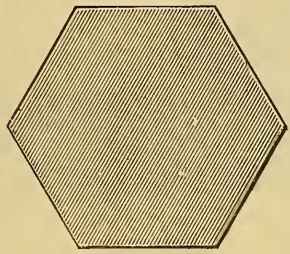
PLOW HANDLE IRON.



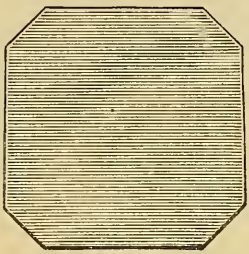
Cuts are full size.

1¼ × ¼ in.		cents per pound.
1½ × ⅞		" "
1¾ × 1		" "

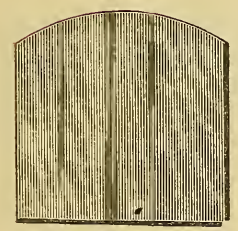
LINK AND PIN IRON.



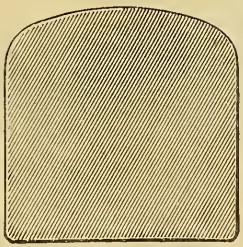
1¼ in. Hexagon.



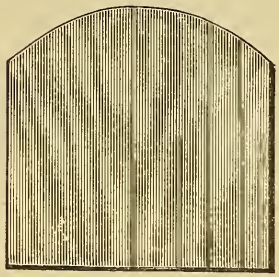
1¼ in. Octagon.



1⅛ × 1⅛ in.

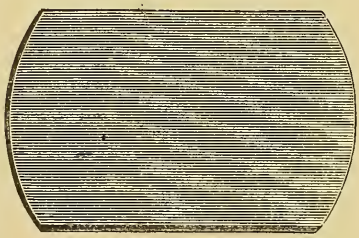


1¼ × 1¼ in.



1⅜ × 1⅜ in.

1¾ × 1 in.

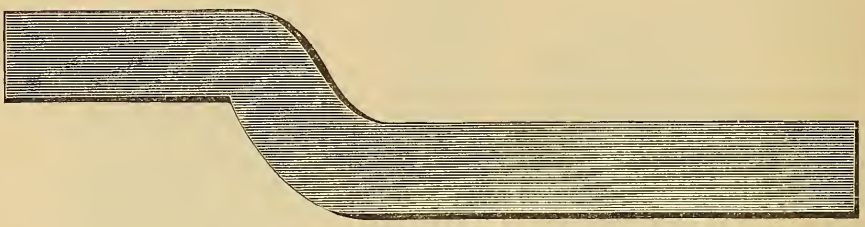


1¾ × 1⅛ in.

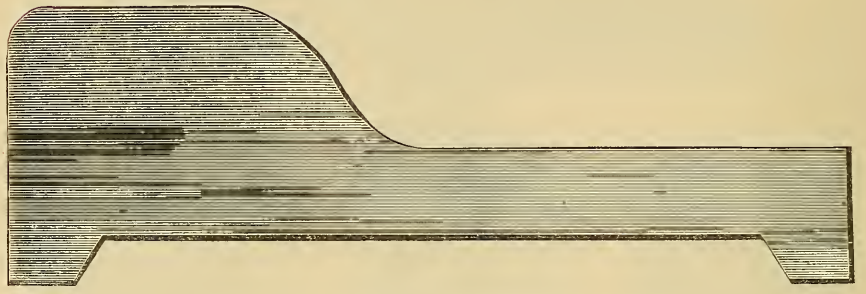
Cuts are full size.

1¼ in. Hexagon Iron	cents per pound.	
1¼ Octagon "	"	"
1⅛ × 1⅛ in. Link "	"	"
1¼ × 1¼ " "	"	"
1⅜ × 1⅜ " "	"	"
1¾ × 1 " "	"	"
1¾ × 1⅛ " "	"	"

STREET RAILWAY IRON.



New Pattern.



Ordinary Pattern.

New Pattern Street Rail	cents per pound.
Ordinary Pattern Street Rail	" "

Flat Rails.

PUNCHED AND COUNTERSUNK.

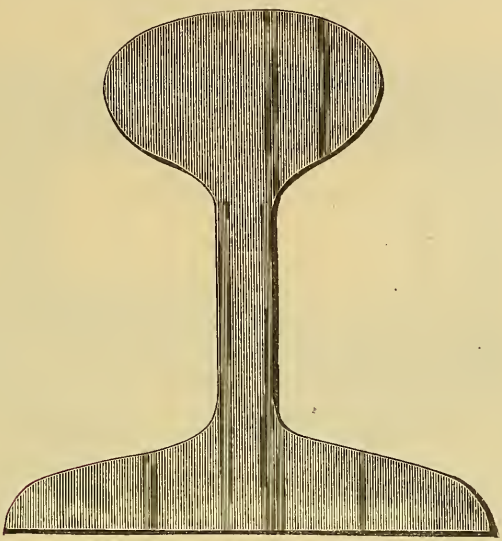
1¼ in. wide by ¼ and $\frac{5}{16}$ in. thick	cents per pound.
1¼ " " ⅜, $\frac{7}{16}$ and ½ in. thick	" "
1½ to 3 in. wide, ⅜ and $\frac{7}{16}$ in. thick	" "
1½, 1¾ and 2 in. wide by ½ and ⅝ in. thick	" "

Railroad Forgings

Driving Axles	cents per pound.
Truck and Tender Axles	" "
Passenger Car Axles	" "
Freight " "	" "
Locomotive Frames	" "
" Frame Shapes	" "
Side and Connecting Rods	" "
Straps	" "
Yokes	" "
Crank Pins	" "
Equalizing Bars	" "
Hammered " 6 to 10×1 to 2 in.	" "
" " 6 " 10×2½ " 4	" "
" " 4½ " 8 in., Round	" "
" " 4½ " 8 Square	" "

Special attention given to all kinds of Railroad Iron and Railroad Forgings.

RAILROAD IRON.



8, 10, 12 and 16 pounds to the yard ..... cents per pound.
18, 20, 25, 28, 30 and 35 pounds to the yard ..... " "
40, 45, 50, 56, 60 " 70 " " ..... " "

RAILROAD T RAILS.

TABLE SHOWING THE NUMBER OF TONS PER MILE CORRESPONDING TO THE FOLLOWING WEIGHTS OF RAILS PER LINEAL YARD. TON OF 2,240 POUNDS.

Weight per Yard.	Tons per Mile.	Weight per Yard.	Tons per Mile.	Weight per Yard.	Tons per Mile.
8 pounds.	$12\frac{1280}{2240}$	40 pounds.	$62\frac{1920}{2240}$	60 pounds.	$94\frac{640}{2240}$
12 "	$18\frac{1920}{2240}$	45 "	$70\frac{1600}{2240}$	62 "	$97\frac{960}{2240}$
16 "	$25\frac{320}{2240}$	50 "	$78\frac{1280}{2240}$	64 "	$100\frac{1280}{2240}$
25 "	$39\frac{640}{2240}$	52 "	$81\frac{1600}{2240}$	65 "	$102\frac{320}{2240}$
30	$47\frac{320}{2240}$	56 "	88	68 "	$106\frac{1920}{2240}$
35 "	55	57 "	$89\frac{1280}{2240}$	70 "	110

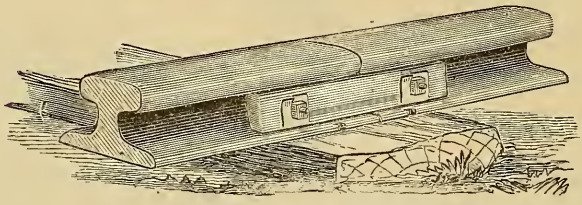
Calculated for "single track" (two rails). Multiply the pounds per yard by $1\frac{1}{7}$, and the result will be the number of tons (of 2,240 pounds) per mile of single track.

NO. OF CROSS-TIES PER MILE OF SINGLE TRACK.

Distance from center to center	24 in.,	2,641 Ties.
" " " "	27	2,348 "
" " " "	30	2,113 "
" " " "	33	1,921 "
" " " "	36	1,761 "

FISH PLATES.

No. 1. Fish Plate.



No. 2. Showing How Applied.

For 50 pound Rail and heavier							cents per pound.	
" 45	"	"	"		advance	$\frac{1}{10}$	"	"
" 40	"	"	"		"	$\frac{2}{10}$	"	"
" 35	"	"	"		"	$\frac{3}{10}$	"	"
" 30	"	"	"		"	$\frac{4}{10}$	"	"
" 25	"	"	"		"	$\frac{5}{10}$	"	"
" 20	"	"	"		"	$\frac{6}{10}$	"	"
" 16	"	"	"		"	$\frac{9}{10}$	"	"

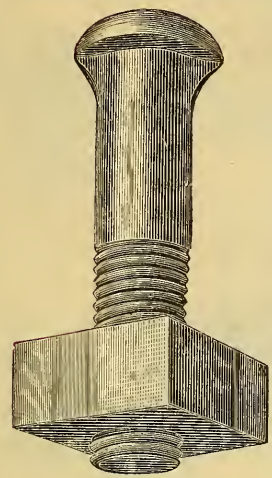
The ordinary length of Splice Plates is 23 or 24 in., with 4 bolts of ¾ in. diameter to each pair of plates. The average weight of the plate is 16 pounds, and of the 4 bolts (with *single* nuts) 4 pounds, making 20 pounds total weight per "joint." If double or "jam" nuts are used the weight of the 4 bolts will be 5½ pounds, or 21½ pounds per joint.

"Single Track."

Length of Rails.	No. of Joints per Mile.	Pounds of Plates per Mile.	Pounds of Bolts per Mile.	Total Weight per Mile.
18 feet.	588	9,408	2,352	11,760
21 "	528	8,448	2,112	10,560
24 "	440	7,040	1,760	8,800
25 "	423	6,768	1,692	8,460
27 "	391	6,256	1,564	7,820
30 "	352	5,632	1,408	7,040

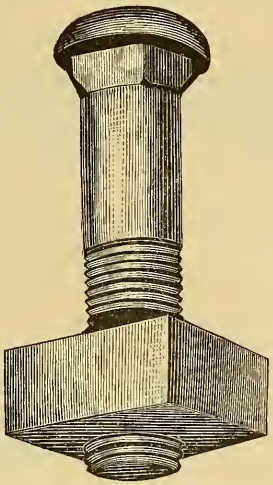
NOTE.—If Double Nuts are used, add 37½ per cent. to the weight of the Bolts.

RAILROAD TRACK BOLTS.



Oval Neck.

Button Head.



Square Neck.

For 50, 56 and 60 pound Rail, $\frac{3}{4} \times 3\frac{1}{4}$, $3\frac{1}{2}$ or $3\frac{3}{4}$ in. long ..... cents per pound.

" 40 " " $\frac{3}{4} \times 3$ " advance $\frac{1}{10}$ " "

" 35 and 30 " " $\frac{5}{8} \times 2\frac{1}{2}$ or $2\frac{3}{4}$ " " $\frac{6}{10}$ " "

" 25 " 20 " " $\frac{1}{2} \times 2\frac{1}{2}$ " " $2\frac{6}{10}$ " "

" 16 " " $\frac{7}{16} \times 2$ " $3\frac{1}{10}$ " "

T *Head Bolts.*

$\frac{3}{4} \times 3\frac{1}{4}$, $3\frac{1}{2}$ or $3\frac{3}{4}$ in. long ..... cents per pound.

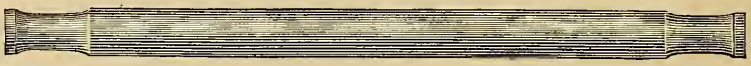
$\frac{3}{4} \times 3$ in. long ..... advance $\frac{1}{10}$ " "

Number of Splices and Bolts,

FOR ONE MILE OF TRACK.

Rails 30 feet long			take	704	Splices,	1,408	Bolts.
" 28	"		"	754	"	1,508	"
" 27	"		"	782	"	1,564	"
" 25	"		"	844	"	1,688	"
" 24	"		"	880	"	1,760	"

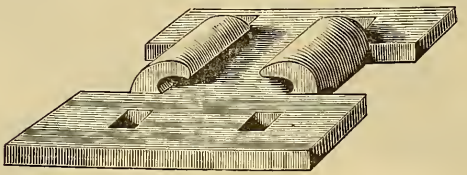
CAR AXLES.



Engine, Car, Tender and Truck.

Driving Axles for Engines			cents per pound.
Car	"	Freight and Passenger	" "
Tender	"		" "
Truck	"		" "

RAILROAD CHAIRS.



Wrought.

Wrought Iron	cents per pound.
Cast Iron for 10, 12 and 16 pound rail	" "

RAILROAD SPIKES.

For T Rails.

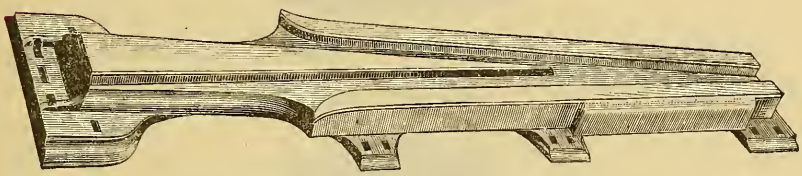
½	in. by 4½, 5, 5½ and 6	in. long	cents per pound.
9/16	" 4½, 5, 5½ " 6	"	" "
⅝	" 4½, 5, 5½ " 6	"	" "

RAILROAD SPIKES.

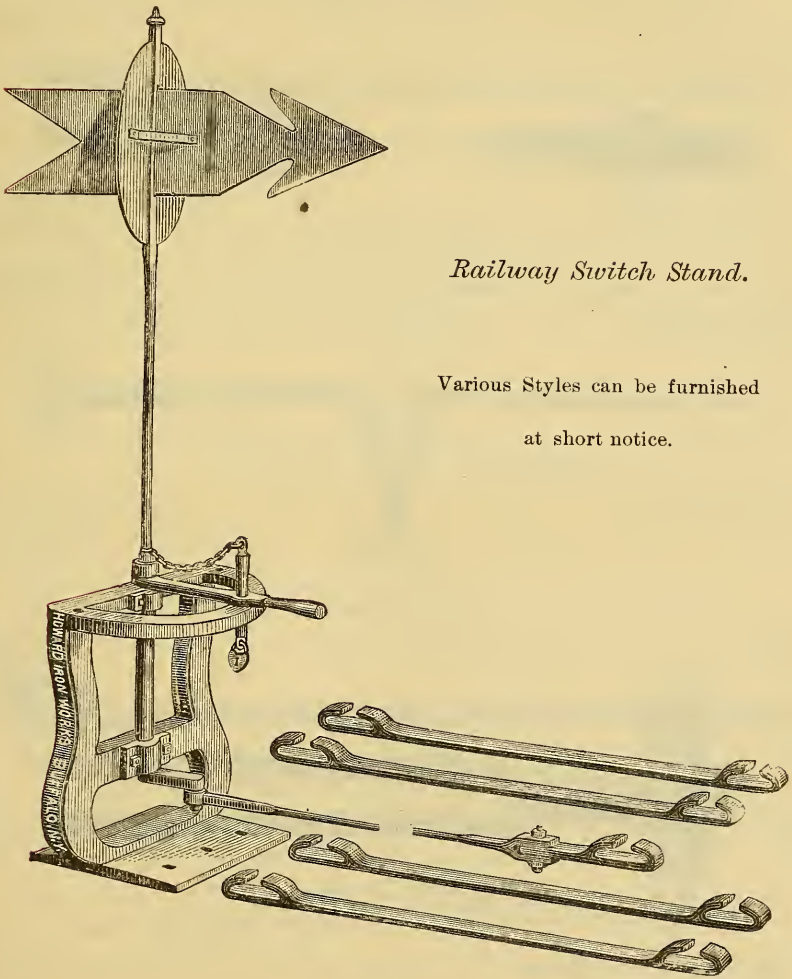
LENGTH AND THICKNESS IN A KEG OF 150 POUNDS.

Length.	Thickness.	No.	Length.	Thickness.	No.	Length.	Thickness.	No.
4½	½	400	4½	9/16	325	4½	⅝	375
5	½	390	5	9/16	296	5	⅝	258
5½	½	356	5½	9/16	290	5½	⅝	219
6	½	311	6	9/16	263	6	⅝	197

RAILWAY FROGS AND SWITCH STANDS.



Can furnish Railway and Crossing Frogs of any Pattern or Angle required.



Railway Switch Stand.

Various Styles can be furnished at short notice.

RAILROAD TOOLS.

Track Punch.

Solid Cast Steel ..... 50 cents per pound.

Track Chisel.

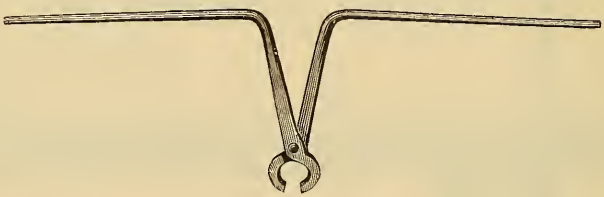
Solid Cast Steel ..... 50 cents per pound.

No. 1.

No. 2.

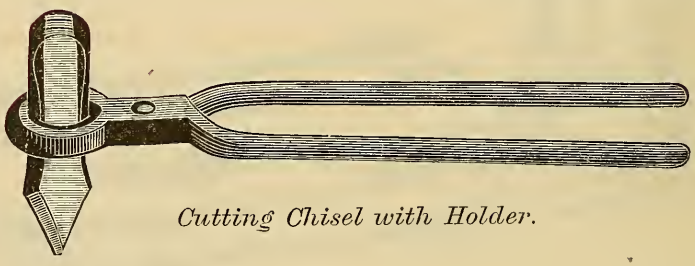
Track Mauls.

Steel Face and Pane, 6 to 10 pounds ..... 25 cents per pound.
Solid Cast Steel, " " ..... 50 " "



Track Tongs.

Each $4 00



Cutting Chisel with Holder.

For Cutting Rails, complete $4 00

RAILROAD BARS.

Tamping Bar.

Steel-pointed Head	8 cents per pound.
Solid Steel	12 " "

Claw Bar, with Single Heel.

Steel-pointed Head	10 cents per pound.
Solid Steel	15 " "

Claw Bar, with Double Heel.

Steel-pointed Head	10 cents per pound.
Solid Steel	15 " "

Shackle Bar.

Steel-pointed, wrought Shackle	10 cents per pound.
Solid Steel, with steel Shackle	20 " "

Can furnish any length and weight of above desired.

CROW-BARS.

Lining Bar.

Steel Pointed ..... 8 cents per pound.
Solid Steel ..... 12 " "

Pinch Bar.

Steel Pointed ..... 8 cents per pound.
Solid Steel ..... 12 " "

Pinch Bar with Heel.

Steel Pointed ..... 8 cents per pound.
Solid Steel ..... 12 " "

Single Heel Crow-Bar.

Steel Pointed ..... 8 cents per pound.
Solid Steel ..... 12 " "

Double Heel Crow-Bar.

Steel Pointed ..... 8 cents per pound.
Solid Steel ..... 12 " "

Can furnish any length and weight of above desired.

RAILROAD PICKS.

Black Finish.

No. 1.	Weight,	3½	pounds; length,	23	in	$8 50 per dozen.
2.	"	4	" "	24		9 00 "
3.	"	4½	" "	25		9 50 "
4.	"	5	" "	26		10 00 "
5.	"	5½	" "	27		10 25 "
6.	"	6	" "	28		10 50 "
7.	"	6½	" "	28½		11 00 "
8.	"	7	" "	29		11 50 "
9.	"	8	" "	29½		12 50 "

Packed 2 Doz. in a case.

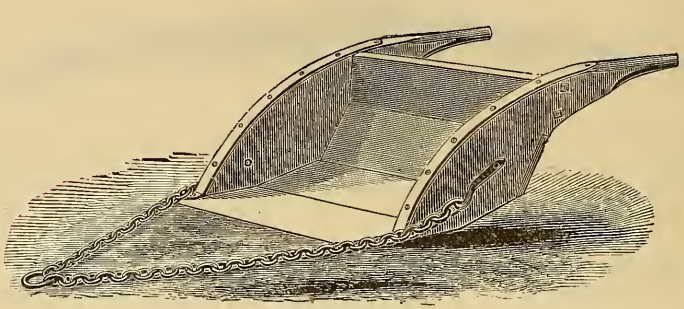
Polished Points.

No. 1.	Weight,	3½	pounds; length,	23	in	$9 50 per dozen.
2.	"	4	" "	24		10 00 "
3.	"	4½	" "	25		10 50 "
4.	"	5	" "	26		11 00 "
5.	"	5½	" "	27		11 25 "
6.	"	6	" "	28		11 50 "
7.	"	6½	" "	28½		12 00 "
8.	"	7	" "	29		12 50 "
9.	"	8	" "	29½		13 50 "

Black Finish.

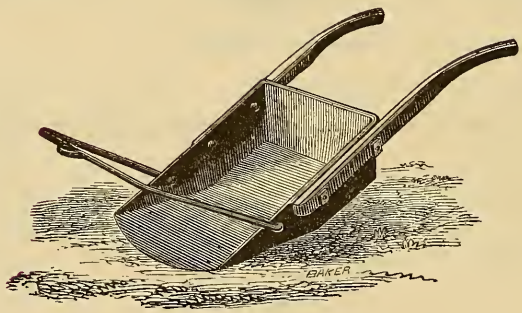
Railway Tamping Picks ..... $15 00 per dozen.

ROAD SCRAPERS.



Wood Sides.

No. 1.	34 in.	Steel Bottom	$11 00	each.
2.	30	" "	10 50	"
3.	34	Wrought Bottom	10 00	"
4.	30	" "	9 50	"

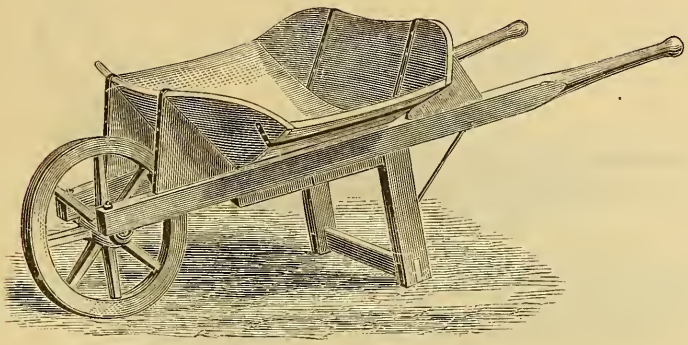


Iron Bottom.

No. 5.	28 in.	Cast Iron	$8 50	each.
6.	26	"	7 75	"

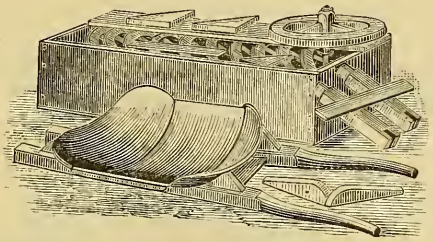
Above are manufactured from excellent material, Ironed first-class in every respect, and equal to any in the market.

BARROWS.



Railroad Barrow.

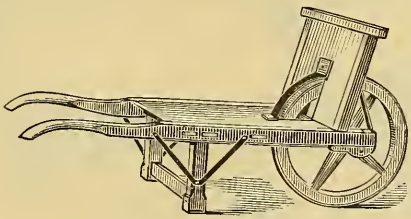
Set up ready for use	$25 00 per dozen.
Knocked down for shipping	22 00 "



Knocked Down Barrows.

Packed and shipped in this manner in dozen lots only. The freight is usually about one half the rate of Barrows set up.

Weight in dozen lots about 500 pounds.

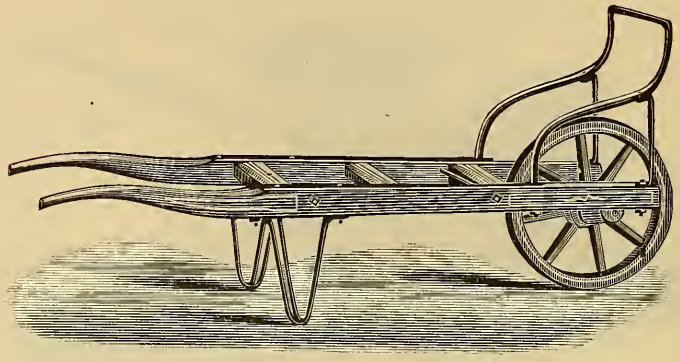


Brick Barrow.

Price ..... $8 00 each.

These Barrows are heavily ironed, and without side-boards, weighing about 60 pounds.

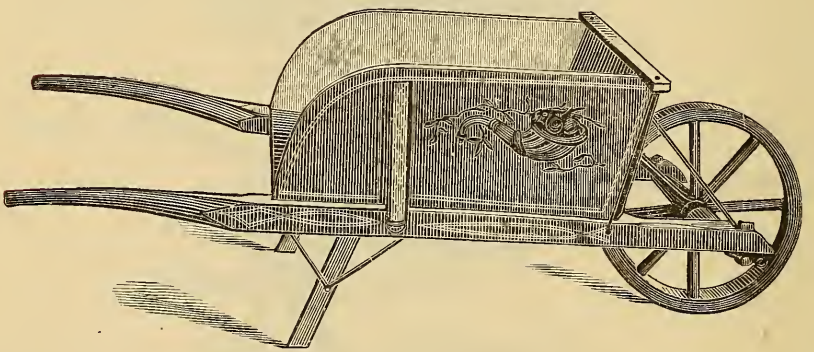
BARROWS.



Wood Barrow.

Price ..... $15 00 each.

Above represents a Barrow for handling wood. It is ironed on the top of both sides, giving it more strength, with an Iron Bracket over the wheel to hold the wood; also throws the weight over the wheel, thereby making it comparatively light for the operator.

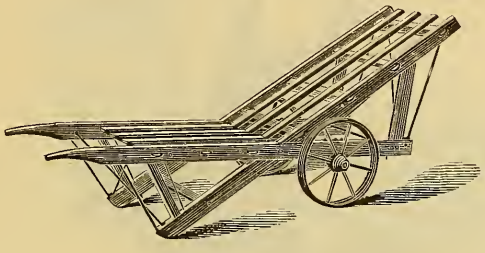


Garden Barrow.

No. 1 Garden Barrow ..... $5 50 each.
2 " " small size ..... 5 25 "

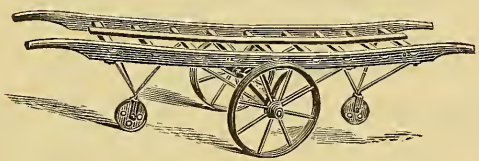
These Barrows are well finished and nicely painted, with good-sized wheel, and well ironed off in every way.

BAGGAGE BARROWS.



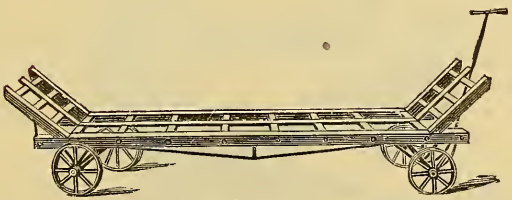
Two Wheels.

No. 1.	6 ft. long,	24 in.	wide		$33 00
2.	9 "	27 "			40 00
3.	9 "	30 "	heavy		55 00



Curved Pattern.

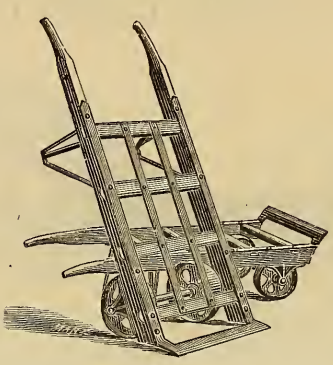
No. 1.	9 ft. long,	24 in.	wide		$40 00
2.	11 "	28 "			45 00
3.	13 "	30 "	heavy		55 00



Four Wheels.

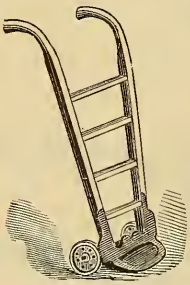
No. 1.	7 ft. long,	26 in.	wide		$70 00
2.	9 "	29 "			80 00

TRUCKS.



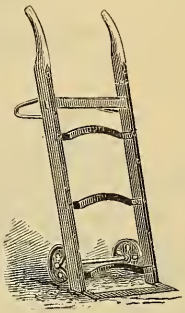
Warehouse and Store Trucks.

No.	Length of Handles.	Width.	Diameter of Wheel.	Price, Half Ironed.	Price, Full Ironed.
1	3 ft. 11 in.	19 in.	6 in.	$7 00	$8 00
2	4 2	20	7½	9 00	10 00
3	4 6	22	9½	----	15 00
4	5 1	23	10¼	----	20 00



Bag Truck.

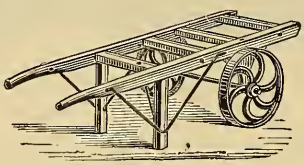
Bent Handles $6 00



Barrel Truck.

No. 1. Full Ironed $9 00
2. " 11 00
3. " 16 00

With open top, $25 00.

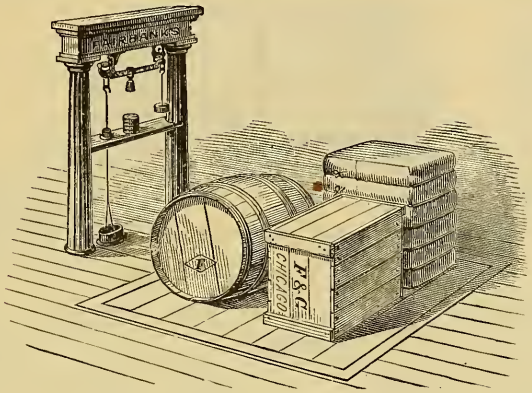


With covered top, $30 00.

Pork Truck.

6 Ft. Long, 22 In. Wide, 22 In. Wheels.

FAIRBANKS' STANDARD SCALES.



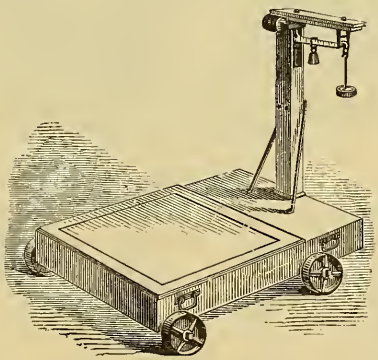
Railroad Depot Scales.

No. 1.	Capacity	6	tons,	Platform	9 × 10	ft.	$280 00
2.	"	4	"	"	7 × 9		230 00
3.	"	3	"	"	5 × 6		210 00
4.	"	2	"	"	4¾ × 7½		168 00

The prices for the above are exclusive of timber and foundation, which are to be furnished at purchaser's expense.

Miner's and Transportation Scales.

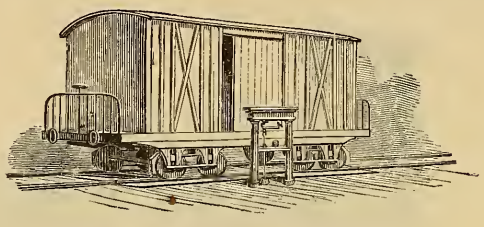
Capacity	3	tons,	Platform	4¾ × 7½	ft., set dormant exclusive of timber	$155 00
"	2	"	"	5 × 6	" " "	135 00
"	3	"	"	4¾ × 7½	portable	200 00
"	2	"	"	5 × 6	"	180 00
"	2	"	"	2¾ × 4¼	"	155 00



Portable Warehouse Scales.

No. 1.	Capacity	5000	pounds,	Platform	48 × 48	in., with wheels	$185 00
1.	"	5000	"	"	48 × 48	without "	170 00
4.	"	3500	"	"	42 × 44	with "	125 00
4.	"	3500	"	"	42 × 44	without "	110 00
5.	"	2500	"	"	31 × 40	with "	105 00
5.	"	2500	"	"	31 × 40	without "	95 00

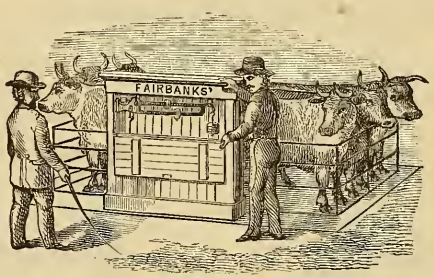
FAIRBANKS' STANDARD SCALES.



Railroad Track Scales.

Capacity.	Length of Platform.	Pattern. Iron Frame.	Pattern. Trussed Lever, requiring Vault.	Capacity.	Length of Platform.	Pattern. Iron Frame.	Pattern. Trussed Lever, requiring Vault.
150 tons.	130 ft. 0 in.	$3,700 00	------	25 tons.	24 ft. 0 in.	$700 00	------
150 "	123 1	3,200 00	------	20 "	20 6	600 00	------
100 "	112 8	2,800 00	------	30. "	33 0	------	$875 00
75 "	84 0	2,200 00	------	25 "	28 0	------	775 00
65 "	61 3	1,850 00	------	20 "	23 0	------	600 00
50 "	42 0	1,100 00	------	18 "	16 0	------	500 00
30 "	34 0	975 00	------	10 "	12 0	------	350 00
30 "	29 0	850 00	------				

The prices for the above are exclusive of timber and foundation, which are to be furnished at purchaser's expense.

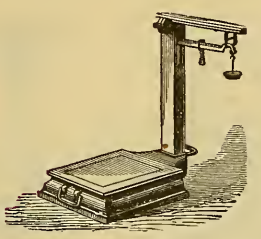


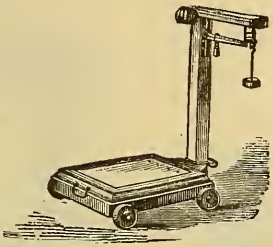
Stock Scales.

Capacity.	Size of Platform.	Distance from Edge of Platform to Beam Rod.	Price.
15 tons, Track Scale Beam.	24 × 9 ft. 6¾ in. 22 × 10 3⅞ 20 × 10 11¾	1 ft. 10⅝ in. 2 1 2 3	$450 00
15 tons, Track Scale Beam.	23 × 7 6¾ 20 × 8 6¼	2 11¼ 3 5⅛	470 00
10 tons, Track Scale Beam.	24 × 9 6¾ 22 × 10 3⅞ 20 × 10 11¾	1 10⅝ 2 1 2 3	395 00

Above prices are exclusive of the cost of lumber and foundation, which is to be paid by purchaser.

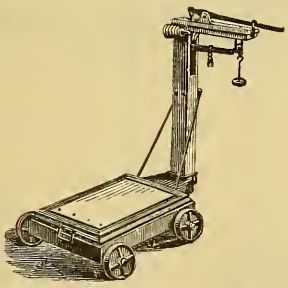
FAIRBANKS' STANDARD SCALES.



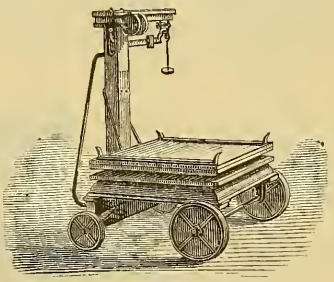


Portable Platform Scales.

Without Wheels.				With Wheels.			
No.	Capacity.	Platform.	Price.	No.	Capacity.	Platform.	Price.
7	2,000 pounds.	30×23 in.	$70 00	7	2,000 pounds.	30×23 in.	$75 00
8	1,600 "	30×23	60 00	8	1,600 "	30×23	65 00
9	1,400 "	28×21	52 00	9	1,400 "	28×21	56 00
10	1,200 "	28×20	45 00	10	1,200 "	28×20	49 00
10½	900 "	26×17	39 00	10½	900 "	26×17	43 00
11	600 "	25×16	30 00	11	600 "	25×16	33 00
11½	400 "	21×15	23 00	11½	400 "	21×15	26 00



Portable Platform Scales.



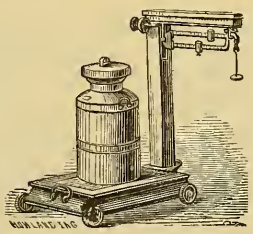
Rolling Mill or Iron Scales.

With Heavy Wheels and Drop Lever.			
No.	Capacity.	Platform.	Price.
2	3,000 pounds.	39×30 in.	$125 00
7	2,500 "	30×23	94 00
8	2,000 "	30×23	82 00
9	1,500 "	28×21	70 00
10	1,200 "	28×20	59 00
10½	1,000 "	26×17	51 00

With Rubber Spring Platform.			
Size.	Capacity.	Platform.	Price.
1st	4,000 pounds.	39×30 in.	$160 00
2d	2,500 "	30×23	125 00

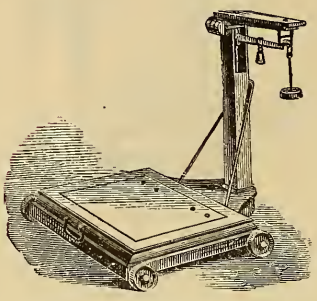
DAIRYMAN'S SCALES.

With Double Beam and Sliding Poise.				
No.	Capacity.	Platform.	Description.	Price.
10½	1,000 pounds.	26×17 in.	With Wheels,	$47 00
			Without "	43 00
11	600 "	25×16	With Wheels,	37 00
			Without "	34 00

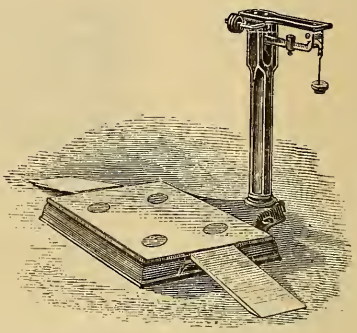


Dairyman's Scales.

FAIRBANKS' STANDARD SCALES.



Miller's and Grain Dealer's or Pork Scales.

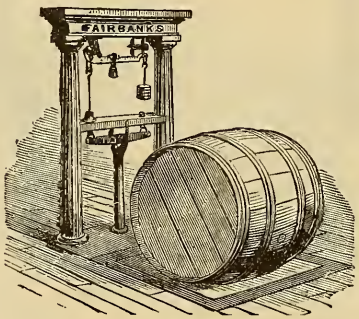


Wheelbarrow Scales.

Capacity.	Platform.	Description.	Price.
POUNDS			
1000	42 × 30 in.	With Wheels.	$73 00
1000	42 × 30	Without "	68 00
1800	44 × 35	With "	94 00
1800	44 × 35	Without "	87 00

NEW PATTERN — EXTRA HEAVY.

Capacity.	Platform.	Description.	Price.
POUNDS			
1000	30 × 42 in.	With Wheels.	$75 00
1000	30 × 42	Without "	70 00



Dormant Warehouse Scales.

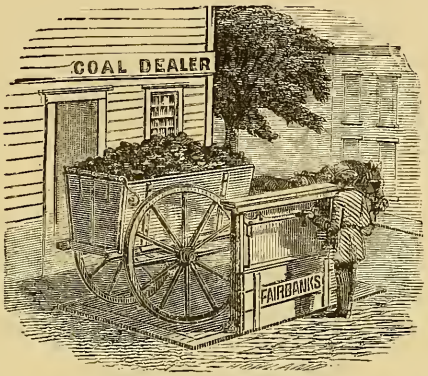
WITH TWO IRON PILLARS, SLIDING POISE BEAM AND GRADUATED COUNTERPOISE.

No.	Capacity.	Platform.	Price.
1	5000 pounds.	48 × 48 in.	$170 00
4	3500 "	42 × 44	125 00
5	2500 "	31 × 40	105 00

WITH DOUBLE BRASS BEAM.

No.	Capacity.	Platform.	Price.
1	5000 pounds.	48 × 48 in.	$180 00
4	3500 "	42 × 44	133 00
5	2500 "	31 × 40	113 00

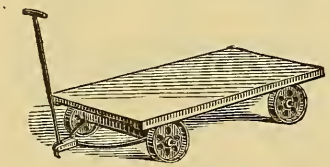
FAIRBANKS' STANDARD SCALES.



Coal Dealer's Scales.

Capacity	Size of Platform.	Distance to Beam Rod from Edge of Platform.	Price.
4 Tons.	14 × 7 ft. 8⅝ in. 16 × 7 3⅞	3 ft. 10¾ in. 3 7¾	$215 00
4 "	14 × 7 6⅛ 15 × 7 3¼	2 11⅞ 2 9¾	195 00
4 "	13 × 7 5¾ 14 × 7 2⅝	2 1 1 11⅞	180 00
3 "	13 × 7 10¾ 14 × 7 8⅝	4 3 10¾	195 00
3 "	13 × 7 8⅝ 14 × 7 6⅛	3 3⅞ 2 11⅛	175 00
3 "	13 × 7 5¾ 14 × 7 2⅝	2 1 1 11⅞	145 00

The above prices are exclusive of the cost of lumber and foundation, which is to be paid by purchaser.



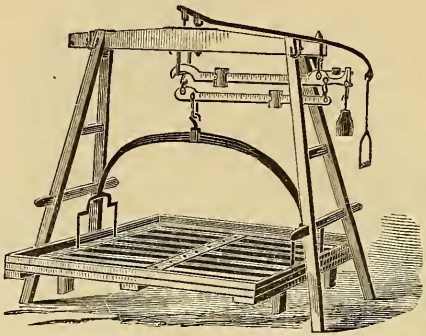
Grain and Meat Wagon.

FOUR WHEELS, VIBRATORY AXLE.

Platform, 2⅔ × 5 ft., extra heavy	$30 00
" 2½ × 4	27 00
" 2½ × 3	22 00

Other sizes made to order.

FAIRBANKS' STANDARD SCALES.



Pork Packer's Scales.

WITH DOUBLE BRASS BEAM, SLIDING POISE, HEAVY FRAME AND BOTTOM. NO WEIGHTS REQUIRED, WHOLE CAPACITY INDICATED ON BEAMS.

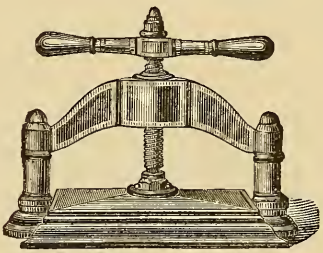
Capacity 2,100 pounds $100 00

Tierce Beams.

BRASS BEAM, SLIDING POISE AND BRASS HOOK WEIGHTS, WITH FRAME COMPLETE.

Capacity, 500 pounds $50 00

COPYING PRESSES.



No. 3.	Taking book 9×11 in.	$9 00
4.	" " 10×12	10 00
5.	" " 11×15	13 00
6.	" " 12×17	15 00
7.	" " 10×16	13 00
9.	" " 11×18	15 00

Railroad and Way Bill Presses.

No. 1.	Taking book 15×20 in.	$35 00
2.	" " 18×22	45 00
3.	" " 20×24	55 00

CAST-IRON PIPES.

WEIGHT OF ONE FOOT IN LENGTH IN POUNDS.

Bore.	Thickness of Metal.	Weight per Foot.	Bore.	Thickness of Metal.	Weight per Foot.
INCHES.	INCHES.	POUNDS.	INCHES.	POUNDS.	POUNDS.
3	3/8	12.4	11	3/4	86.4
3	1/2	17.1	11	7/8	101.8
3	5/8	22.2	12	5/8	77.3
4	3/8	16.1	12	3/4	93.7
4	1/2	22.1	12	7/8	110.4
4	5/8	28.3	12	1	127.4
5	3/8	19.8	14	5/8	89.6
5	1/2	26.9	14	3/4	108.4
5	5/8	34.4	14	7/8	127.5
5	3/4	42.3	14	1	147.0
6	3/8	23.4	15	3/4	115.7
6	1/2	31.9	15	7/8	136.1
6	5/8	40.6	15	1	156.8
6	3/4	49.7	15	1 1/8	177.7
7	3/8	27.1	16	3/4	123.1
7	1/2	36.8	16	7/8	144.7
7	5/8	46.7	16	1	166.6
7	3/4	56.8	16	1 1/8	188.7
8	3/8	30.8	18	3/4	137.9
8	1/2	41.6	18	7/8	161.8
8	5/8	52.8	18	1	186.2
8	3/4	64.3	18	1 1/8	210.8
9	3/8	34.4	20	7/8	178.9
9	1/2	46.6	20	1	205.8
9	5/8	58.9	20	1 1/8	232.9
9	3/4	71.7	20	1 1/4	260.3
10	1/2	51.4	22	1	225.4
10	5/8	65.1	22	1 1/8	254.9
10	3/4	79.0	22	1 1/4	284.8
10	7/8	93.3	24	1	245.0
11	1/2	56.4	24	1 1/8	276.9
11	5/8	71.0	24	1 1/4	319.3

The average weight of a Cast-Iron Water Pipe, 12 feet long with flange, is found by adding the constant 35 to the product of the diameter, multiplied by the thickness, multiplied by 127.

STANDARD WATER PIPES.

Bore.	Thickness of Metal.	Depth of Socket.	Thickness of Socket.	Space for Packing.	Weight of 9 Feet Lengths.
INCHES.	INCHES.	INCHES.	INCHES.	INCHES.	POUNDS.
3	5/16	3 1/2	3/8	3/8	108
4	5/16	3 1/2	7/16	3/8	154
5	3/8	3 3/4	7/16	7/16	184
6	3/8	3 3/4	1/2	7/16	224
7	3/8	3 3/4	1/2	7/16	256
8	7/16	3 3/4	1/2	7/16	340
9	7/16	4	9/16	1/2	383
10	1/2	4	5/8	1/2	492
11	1/2	4	5/8	1/2	526
12	9/16	4	11/16	1/2	640
14	5/8	4	11/16	1/2	845

The 9-feet length is taken from the end of one pipe to end of the next when laid.

WROUGHT IRON PIPE.

For Steam, Gas and Water.

REVISED PRICE LIST, JANUARY 27, 1875.

Diameter Inside in Inches.	Weight per Foot.	Price per Foot.		
		Plain.	Enameled.	Galvanized.
⅛	.24	$0 04	$0 00	$0 08
¼	.42	04	08	08
⅜	.56	05	08	08
½	.85	01	12	12
¾	1.12	09	14	14
1	1.67	12	19	19
1¼	2.25	19	23	28
1½	2.69	25	36	36
2	3.66	34	48	48
2½	5.77	54	77	77
3	7.54	67	1 00	1 00
3½	9.05	90	1 30	1 30
4	10.72	1 10	1 60	1 60
4½	12.49	1 40	2 00	2 00
5	14.56	1 65	2 35	2 35
6	18.77	2 25	3 50	3 50
7	23.41	3 25	4 50	----
8	28.35	4 50	5 90	----
9	34.07	6 00	7 70	----
10	40.64	8 50	10 50	----

Taper of Threads, 1 to 32 on each side.

EXTRA AND DOUBLE EXTRA STRONG.

Size and Diameter.		Extra Strong.			Double Extra Strong.		
Nominal Size.	Actual Outside Diam.	Price per Foot.	Actual Inside Diam.	Thickness.	Price per Foot.	Actual Inside Diam.	Thickness.
⅛	0.40	----	0.20	0.10	----	----	----
¼	0.50	----	0.29	0.12	----	----	----
⅜	0.67	$0 10	0.42	0.13	----	----	----
½	0.84	14	0.54	0.15	$0 28	0.24	0.30
¾	1.05	18	0.74	0.16	35	0.42	0.31
1	1.31	24	0.95	0.18	50	0.58	0.36
1¼	1.66	40	1.27	0.19	79	0.88	0.39
1½	1.90	50	1.49	0.20	1 00	1.09	0.41
2	2.37	70	1.93	0.22	1 35	1.49	0.42
2½	2.87	1 10	2.31	0.28	2 15	1.75	0.56
3	3.50	1 35	2.89	0.30	2 70	2.28	0.61
3½	4.00	----	3.36	0.32	3 70	2.72	0.64
4	4.50	----	3.82	0.34	4 50	3.14	0.68

LAP WELDED

WROUGHT IRON CASING.

For Artesian, Oil and Salt Wells.

REVISED PRICE LIST, FEBRUARY 27, 1874.

Nominal Inside Diameter.	Actual Outside Diameter.	Weight.	Plain.	Enameled.
INCH.	INCH.	PER FOOT.	PER FOOT.	PER FOOT.
1½	1¾	1.67	$0 31.	$0 42
2	2¼	2.24	35	51
2¼	2½	2.76	38	58
2½	2¾	3.05	42	65
2¾	3	3.33	45	68
3	3¼	3.96	50	83
3¼	3½	4.27	57	90
3½	3¾	4.59	64	1 04
3¾	4	5.32	72	1 15
4	4¼	5.50	80	1 30
4¼	4½	6.01	85	1 35
4¾	5	7.23	1 05	1 63
5	5¼	7.67	1 12	1 82
5 3/16	5½	8.08	1 20	2 00
5⅝	6	9.35	1 35	2 20
6¼	6⅝	10.06	1 50	2 40
6⅝	7	12.44	1 70	2 78
7⅝	8	15.11	2 75	4 10
8¼	8⅝	16.16	3 00	4 45

From 9 to 16 in. made to special order only.

REVISED PRICE LIST.

FEBRUARY 1, 1875.

BEING THE STANDARD LIST ADOPTED BY THE LEADING MANUFACTURERS.

TO TAKE THE PLACE OF PREVIOUS LISTS.

Size.	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6
Ells	6	6	7	8	11	17	25	33	45	85	1 30	1 80	2 40	3 00	4 00	5 80
Tees	--	8	9	10	14	20	31	43	70	1 20	1 80	2 50	3 30	4 25	5 60	8 00
Crosses	--	--	12	14	20	30	45	60	1 00	1 60	2 30	3 75	4 50	5 50	7 00	10 00
Unions	--	18	22	25	32	40	55	70	1 00	1 75	2 75	4 00	5 50	----	----	-----
Bushings	--	--	6	7	9	12	15	20	30	45	65	90	1 20	1 60	2 00	3 00
Unions—Gal.	--	23	30	37	48	60	85	1 05	1 50	2 50	4 00	----	----	----	----	-----

BOILER TUBES.

Made of Best Charcoal Hammered Iron.

Outside Diameter.	Thickness Wire Gauge.	Weight per Foot.	Price per Foot.
1 in.	No. 15	.7	24 cents.
1¼	" 15	.9	24 "
1½	" 14	1.25	24 "
1¾	" 13	1.66	24 "
2	" 13	1.98	24 "
2¼	" 13	2.24	27 "
2½	" 12	2.75	31 "
2¾	" 12	3.04	34 "
3	" 12	3.33	38 "
3¼	" 11	3.96	44 "
3½	" 11	4.27	50 "
3¾	" 11	4.59	55 "
4	" 10	5.32	65 "
4½	" 10	6.01	70 "
5	" 9	7.22	85 "

LOCOMOTIVE BOILER STAY BOLT TUBES.

Inside Diameter,	$\frac{4}{16}$	$\frac{6}{16}$	$\frac{7}{16}$	$\frac{8}{16}$	$\frac{9}{16}$	$\frac{10}{16}$	$\frac{11}{16}$	$\frac{12}{16}$	$\frac{13}{16}$	$\frac{14}{16}$
Outside Diameter,	¾	⅞	$\frac{15}{16}$	1	$1\frac{1}{16}$	$1\frac{1}{8}$	$1\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Price per Foot,	$0 45	50	55	60	65	70	75	80	90	1 00

FELTING.

For Covering Boilers and Pipes.

No. 1. Hair,	½ in. thick	9	cents per	square foot.
" 2. "	¾ "	11	"	"
" 3. "	1 "	13	"	"
" 4. Wood Back,	¾ "	25	"	"
" 5. " "	1 "	28	"	"

WROUGHT IRON TUBES.

For Steam, Gas or Water.

1¼ In. and Below, Butt Welded; Proved to 300 Pounds per Square Inch, Hydraulic Pressure.

1½ In. and Above, Lap " " 500 " " " " " " .

TABLE OF STANDARD SIZES.

Inside Diameter.	Actual Inside Diameter.	Actual Outside Diameter.	Thickness.	Internal Circumference.	External Circumference.	Length of Pipe per square foot inside surface.	Length of Pipe per square foot outside surface.	Internal Area.	External Area.	Length of Pipe containing 1 cubic foot.	Weight per foot of length.	No. of Threads per inch of Screw.
INCHES.	INCHES.	INCHES.	INCHES.	INCHES.	INCHES.	FEET.	FEET.	INCHES.	INCHES.	FEET.	POUNDS.	
⅛	.270	.405	.068	.848	1.272	14.15	9.44	.0572	.129	2500.	.243	27
¼	.364	.54	.088	1.144	1.696	10.50	7.075	.1041	.229	1385.	.422	18
⅜	.494	.675	.091	1.552	2.121	7.67	5.657	.1916	.358	751.5	.561	18
½	.623	.84	.109	1.957	2.652	6.13	4.502	.3048	.554	472.4	.845	14
¾	.824	1.05	.113	2.589	3.299	4.635	3.637	.5333	.866	270.	1.126	14
1	1.048	1.315	.134	3.292	4.134	3.679	2.903	.8627	1.357	166.9	1.670	11½
1¼	1.380	1.66	.140	4.335	5.215	2.768	2.301	1.496	3.164	96.25	2.258	11½
1½	1.611	1.9	.145	5.061	5.969	2.371	2.01	2.038	2.835	70.65	2.694	11½
2	2.067	2.375	.154	6.494	7.461	1.848	1.611	3.355	4.430	42.36	3.667	11½
2½	2.468	2.875	.204	7.754	9.032	1.547	1.328	4.783	6.491	30.11	5.773	8
3	3.067	3.5	.217	9.636	11.996	1.245	1.091	7.388	9.621	19.49	7.547	8
3½	3.548	4.	.226	11.146	12.566	1.077	.955	9.887	12.566	14.56	9.055	8
4	4.026	4.5	.237	12.648	14.137	.949	.849	12.730	15.904	11.31	10.728	8
4½	4.508	5.	.247	14.153	15.708	.848	.765	15.939	19.635	9.03	12.492	8
5	5.045	5.563	.259	15.849	17.475	.757	.629	19.990	24.299	7.20	14.564	8
6	6.065	6.625	.280	19.054	20.813	.63	.577	28.889	34.471	4.98	18.767	8
7	7.023	7.625	.301	22.063	23.954	.544	.505	38.737	45.663	3.72	23.410	8
8	7.982	8.625	.322	25.076	27.096	.478	.444	50.039	58.426	2.88	28.348	8
9	9.001	9.688	.344	28.277	30.433	.425	.394	63.633	73.715	2 26	34.077	8
10	10.019	10.75	.366	31.475	33.772	.381	.355	78.838	90.762	1.80	40.641	8

LAP WELDED

AMERICAN CHARCOAL IRON BOILER TUBES.

TABLE OF STANDARD SIZES.

External Diameter.	Internal Diameter.	Thickness.	External Circumference.	Internal Circumference.	Length of Pipe per Square Ft. Inside Surface.	Length of Pipe per Square Ft. Outside Surf.	Internal Area.	External Area.	Weight per Foot.
INCH.	INCH.	INCH.	INCH.	INCH.	FEET.	FEET.	INCH.	INCH.	POUNDS.
1	.856	.072	3.142	2.689	4.460	3.819	.575	.785	.708
1¼	1.106	.072	3.927	3.474	3.455	3.056	.960	1.227	.9
1½	1.334	.083	4.712	4.191	2.863	2.547	1.396	1.767	1.250
1¾	1.560	.095	5.498	4.901	2.448	2.183	1.911	2.405	1.665
2	1.804	.098	6.283	5.667	2.118	1.909	2.556	3.142	1.981
2¼	2.054	.098	7.069	6.484	1.850	1.698	3.314	3.976	2.238
2½	2.283	.109	7.854	7.172	1.673	1.528	4.094	4.909	2.755
2¾	2.533	.109	8.639	7.957	1.508	1.390	5.039	5.940	3.045
3	2.783	.109	9.425	8.743	1.373	1.273	6.083	7.069	3.333
3¼	3.012	.119	10.210	9.462	1.268	1.175	7.125	8.296	3.958
3½	3.262	.119	10.995	10.248	1.171	1.091	8.357	9.621	4.272
3¾	3.512	.119	11.781	11.033	1.088	1.018	9.687	11.045	4.590
4	3.741	.130	12.566	11.753	1.023	.955	10.992	12.566	5.320
4½	4.241	.130	14.137	13.323	.901	.849	14.126	15.904	6.010
5	4.72	.140	15.708	14.818	.809	.764	17.497	19.635	7.226
6	5.699	.151	18.849	17.904	.670	.637	25.509	28.274	9.346
7	6.657	.172	21.991	20.914	.574	.545	34.805	38.484	12.435
8	7.636	.182	25.132	23.989	.500	.478	45.795	50.265	15.109
9	8.615	.193	28.274	27.055	.444	.424	58.291	63.617	18.002
10	9.573	.214	31.416	30.074	.399	.382	71.975	78.540	22.19

SKYLIGHT AND FLOOR GLASS.

WEIGHT PER SQUARE FOOT.

Thickness,	⅛	3/16	¼	⅜	½	⅝	¾	1	inch.
Weight,	1.62	2.43	3.25	4.88	6.50	8.13	9.75	13	pounds.

Weight per Cubic Foot, 156 pounds.

FLAGGING.

WEIGHT PER SQUARE FOOT.

Thickness,	1	2	3	4	5	6	7	8	inch.
Weight,	14	28	42	56	70	84	98	112	pounds.

Weight per Cubic Foot, 168 pounds.

RIVETED IRON FLUES.

WEIGHT PER LINEAL FOOT.

COVERING LAPS AND RIVETS IN GENERAL USE.

10 in. Diameter,	$\frac{3}{16}$ in. thick	24½ pounds per foot.	
11 "	$\frac{3}{16}$ "	27 "	"
12 "	$\frac{3}{16}$ "	29½ "	"
14 "	¼ "	45 "	"
15 "	No. 3 Wire Gauge	54 "	"
16 "	3 "	57 "	"
17 "	$\frac{5}{16}$ in. thick	70 "	"

RIVETED IRON PIPES.

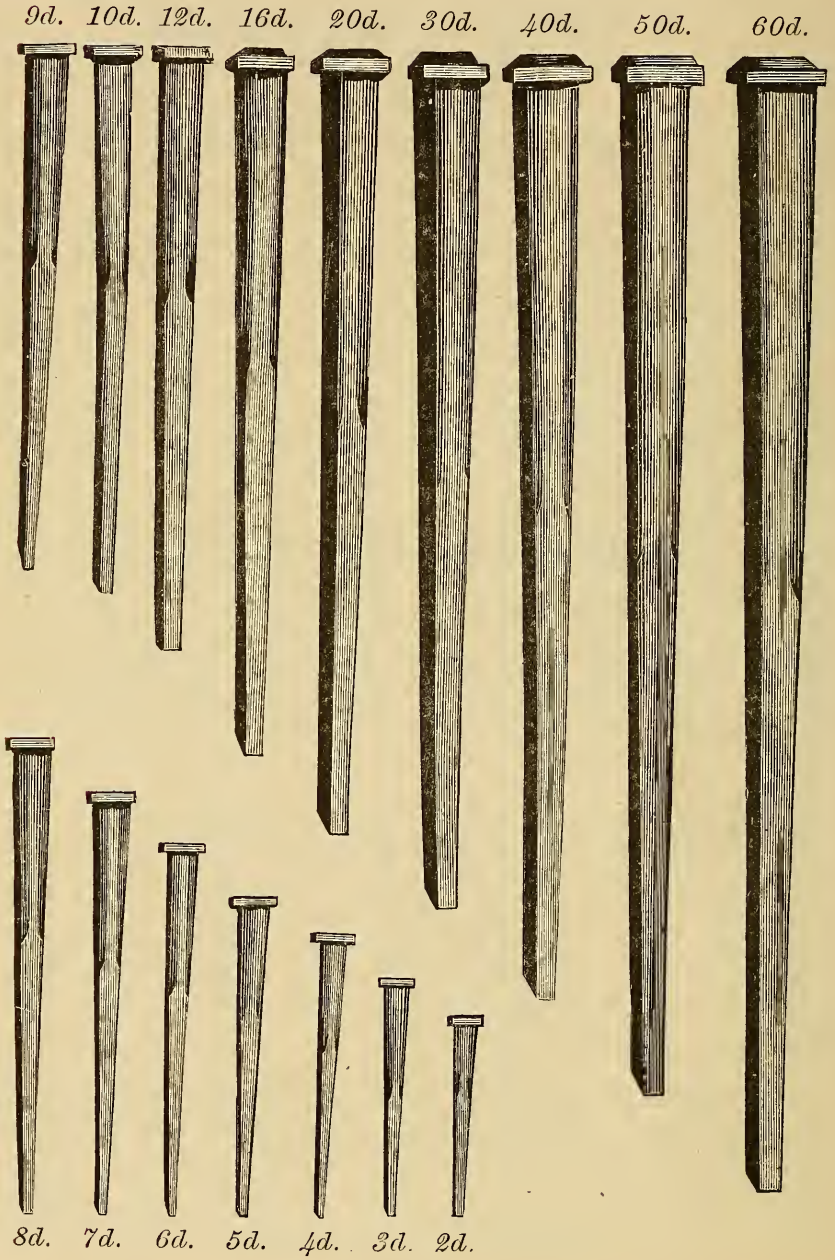
WEIGHT PER LINEAL FOOT.

Bore in Inches.	Thickness of Metal.			Bore in Inches.	Thickness of Metal.		
	⅛ in.	$\frac{3}{16}$ in.	¼ in.		$\frac{3}{16}$ in.	¼ in.	$\frac{5}{16}$ in.
5	7.15	10.7	14.23	11	22.75	30.45	38.15
5½	7.18	11.71	15.61	12	24.8	33.	41.25
6	8.45	12.6	16.85	13	26.75	35.75	44.55
6½	9.05	13.61	18.15	14	28.65	38.45	47.1
7	9.75	14.65	19.55	15	30.83	41.00	51.45
7½	10.45	15.7	20.85	16	32.94	43.75	54.75
8	11.15	16.65	22.25	17	34.85	46.45	58.1
8½	11.85	17.6	23.55	18	36.3	49.1	61.4
9	12.5	18.75	25.	19	38.00	51.75	64.7
9½	13.15	19.75	26.25	20	41.2	55.6	68.
10	13.96	20.8	27.7				
10½	14.45	21.75	29.1				

Weights given in above list for Riveted Iron Pipes includes Laps for riveting and caulking only. Weight of the rivets must be added in order to get weight of pipe finished.

COMMON CUT NAILS.

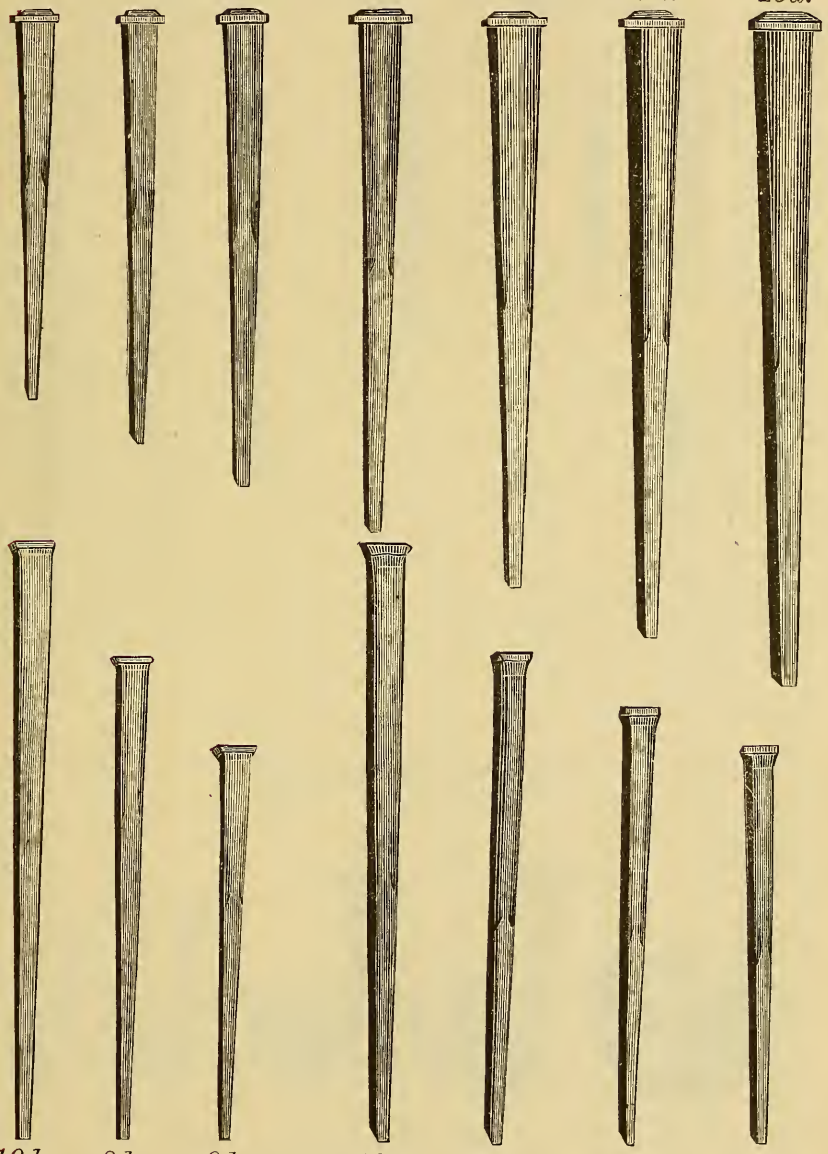
FULL SIZE ILLUSTRATIONS.



COMMON CUT NAILS.

FULL SIZE ILLUSTRATIONS.

Fencing Nails.



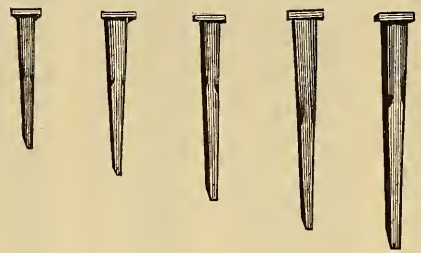
Casing Nails.

Brad Nails.

COMMON CUT NAILS.

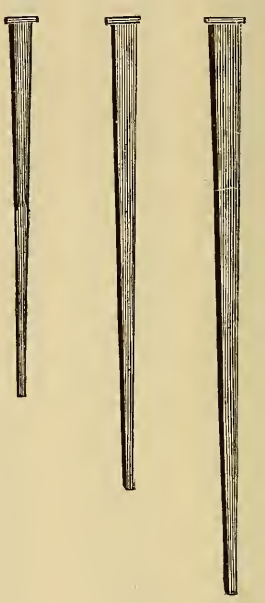
FULL SIZE ILLUSTRATIONS.

Barrel Nails.



¾ in. ⅞ in. 1 in. 1⅛ in. 1¼ in.

Finishing Nails.

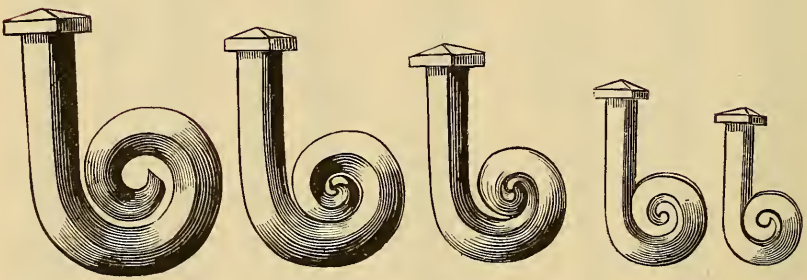


6d. *8d.* *10d.*

Fine Nails. *3d.* *2d.*

Tobacco Nail. ⅞ in.

CLINCH NAILS.



10d. 3 in. *9d.* 2¾ in. *8d.* 2½ in. *7d.* 2¼ in. *6d.* 2 in.

NAILS.

The regular advance must be added to the price of the standard sizes, viz.: 10d. to 60d.

Common, Brads and Fencing.

10d., 12d., 16d., 20d., 30d., 40d., 50d., 60d., ordinary sizes			per keg.
8d. and 9d.	advance	$0 25	"
6d. and 7d.	"	50	"
4d. and 5d.	"	75	"
3d.	"	1 50	"
2d.	"	2 75	"

Fine Blued.

3d.	advance	$3 00	per keg.
2d.	"	3 75	"

Finishing.

10d., 12d., 16d.	advance	$1 25	per keg.
8d.	"	1 50	"
6d.	"	1 75	"
4d.	"	2 00	"
1¼ in. long	"	4 50	"
1 "	"	5 50	"

Casing.

10d., 12d., 16d., 20d., 30d.	advance	$0 75	per keg.
8d.	"	1 00	"
6d.	"	1 25	"
4d.	"	1 50	"

Barrel.

⅞ in. long	advance	$3 00	per keg.
1 "	"	2 50	"
1⅛ "	"	1 75	"
1¼ "	"	1 50	"
1⅜ "	"	1 00	"
1½ "	"	75	"

Clinch.

10d., 3 in. long	advance	$1 75	per keg.
9d., 2¾ "	"	1 75	"
8d., 2½ "	"	1 75	"
7d., 2¼ "	"	1 75	"
6d., 2 "	"	1 75	"

Lining.

⅞ in. long	advance	$4 50	per keg.

NAILS.

The regular advance must be added to the price of the standard sizes, viz.: 10d. to 60d.

Box.

10d. and larger	advance	$0 50	per keg.
8d. and 9d.	"	75	"
6d. and 7d.	"	1 00	"
4d. and 5d.	"	1 25	"

Tobacco Head.

8d.	advance	$0 75	per keg.
7d.	"	1 00	"
6d.	"	1 00	"

LENGTHS AND NUMBER OF NAILS TO THE POUND.

SIZE.	DESCRIPTION.	LENGTH.	NUMBER TO POUND.
2d.	Fine Blued	1 in.	1,050
3d.	" "	1⅛	725
3d.	Common Nails	1¼	400
4d.	" "	1½	300
5d.	" "	1¾	200
6d.	" "	2	150
7d.	" "	2¼	120
8d.	" "	2½	85
9d.	" "	2¾	75
10d.	" "	3	60
12d.	" "	3¼	50
16d.	" "	3½	40
20d.	" "	4	20
30d.	" "	4½	16
40d.	" "	5	14
50d.	" "	5½	11
60d.	" "	6	8
6d.	Common Fencing	2	80
8d.	" "	2½	50
10d.	" "	3	30
12d.	" "	3¼	27
16d.	" "	3½	21
6d.	Casing	2	210
8d.	"	2½	134
16d.	"	3	78
6d.	Finishing	2	317
8d.	"	2½	208
10d.	"	3	126
6d.	Clinch	2	118
8d.	"	2½	80
10d.	"	3	45

Box Nails contain about 25 per cent. more of Nails per keg than common sizes.

NAILS.

Roofing Nails, Iron	advance above Common,	$0 25	per keg
" Galvanized	" " "	5 00	"
" Tinned	" " "	5 00	"

Copper.

Flat Heads, all sizes	50 cents per pound.
Round " "	50 " "

Cigar Box.

HALF WEIGHT IN PAPERS.

Lengths	½	⅝	¾	in.
Per Paper	3½	4	5	cents.
Per Dozen	42	48	60	"
In Case	80	60	48	dozen.

One pound papers, all sizes ..... 25 cents per pound.

100 Papers in a Case.

IN BULK.

Kegs of 100 pounds, all sizes ..... 25 cents per pound.

Chair.

Lengths	½	⅝	¾	⅞	1	1⅛	in.
Per 1000	7	9	11	13	15	15	cents.
Per Pound	28	24	22	21	20	18	"

1 Pound Papers. 100 Papers in a Case.

Basket.

OVAL AND FLAT HEADS.

Lengths	½	⅝	¾	⅞	1	1¼	in. and longer.
Per Pound	27	22	20	18	16	14	cents.

Tinned, 5 cents per pound advance.

Hungarian Shoe.

Swedes, all sizes	17	cents per pound.
American, "	14	" "
Charcoal, "	16	" "

Channel.

IN ONE POUND PAPERS.

Lengths	2½–8	3–8	3½–8	4–8	4½–8	5–8	5½–8	in.
Price	75	50	45	40	35	32	32	cents per pound.

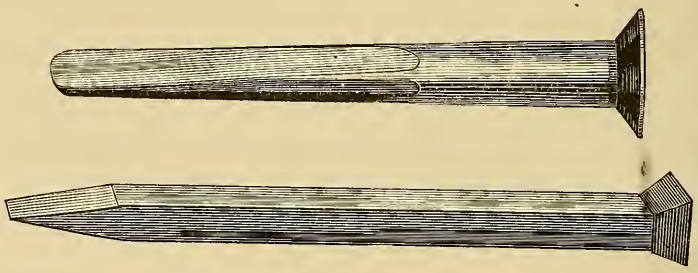
SPIKES.

Cut Spike.

4, 4½, 5, 5½ and 6 in. long.....advance on common nails, 25 cents per keg.

Wrought Boat Spike.

⅜, $\frac{7}{16}$, ½ and $\frac{9}{16}$ in. square, all lengths up to 12 in.			per keg.
⅜ and $\frac{7}{16}$ in. square, from 12 to 18 in.	advance	$0 25	"
$\frac{5}{16}$ in. square, all lengths	"	50	"
¼ " "	"	1 00	"



Street Railway and Strap Rail Spikes.

⅜ and $\frac{7}{16}$ in. by 3½ in. long	per keg.
¼ " $\frac{5}{16}$ " 2½ "	"

Small Hook Head Spikes.

FOR T-RAILS IN MINES AND TRAMWAYS.

$\frac{7}{16}$ × 3½ and 4 in. long			per keg.
⅜ × 2½, 3 and 3½ in. long	advance	$1 50	"
$\frac{5}{16}$ × 2½ and 2¾ in. long	"	2 00	"

Particular attention given to furnishing all kinds of spikes desired.

DRIFT BOLTS.

Plain Point and Head.

1⅛ in. Square Iron ..... cents per pound.

Plain Point and Upset Head.

1⅛ in. Square Iron ..... cents per pound.

Barbed Point and Plain Head.

1⅛ in. Square Iron ..... cents per pound.

Barbed Point and Upset Head.

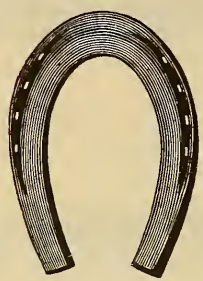
1⅛ in. Square Iron ..... cents per pound.

HARROW TEETH.

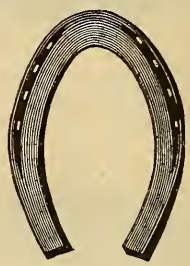
Pointed with Plain or Upset Head.

⅝ in. Square, all lengths ..... cents per pound.
¾ " " " ..... " "
⅞ " " " ..... " "
1 " " " ..... " "
Round Steel Teeth ..... " "

HORSE SHOES.



Forward.



Hind.

Burden Pattern.

Forward, Single.	Hind, Single.	Forward and Hind, Single.	Forward and Hind, Assorted.	Price per Keg.
No. 1	No. 1	No. 1	Nos. 1, 2, 3 and 4	$7 00
2	2	2	1, 2 and 3	7 00
3	3	3	2 and 3	7 00
4	4	4	2, 3 and 4	7 00
5	5	5	3, 4 and 5	7 00
6	6	6	4 and 5	7 00

Burden Shoes are assorted in kegs as desired.

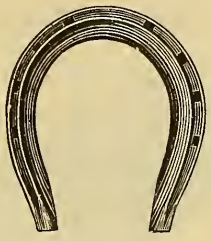
MULE SHOES.

Burden Pattern.

Nos. 1, 2, 3, 4 and 5 ..... $8 00 per keg.

Only one size packed in each keg.

BESSEMER STEEL HORSE SHOES.



Hale's Patent.

STANDARD LIST OF SIZES.

Prices Subject to Change without Notice.

Sizes.	Number of Shoes per Keg.	Weight per Shoe.	Price per Keg.
No. 1	165 shoes.	$9\frac{7}{10}$ oz.	$10 00
2	135 "	$10\frac{8}{10}$ "	10 00
3	108 "	$14\frac{8}{10}$ "	10 00
4	92 "	$17\frac{3}{10}$ "	10 00
5	68 "	$23\frac{5}{10}$ "	10 00
6	65 "	$24\frac{6}{10}$ "	10 00

WEIGHT OF BEST KNOWN IRON HORSE SHOES, COMPARED WITH THE WEIGHT OF HALE'S STEEL SHOES.

Sizes.	Burdens & Shoenberger's.	Rhode Island.	Hale's Steel.
No. 1	$3\frac{1}{4}$ pounds per set.	$3\frac{3}{4}$ pounds per set.	$2\frac{1}{4}$ pounds per set.
2	4 " "	$4\frac{1}{2}$ " "	$3\frac{1}{4}$ " "
3	$4\frac{1}{2}$ " "	5 " "	$3\frac{5}{8}$ " "
4	$5\frac{3}{4}$ " "	$6\frac{1}{2}$ " "	$4\frac{3}{8}$ " "
5	$6\frac{1}{2}$ " "	$8\frac{1}{4}$ " "	$6\frac{1}{8}$ " "
6	$8\frac{3}{4}$ " "	$8\frac{3}{4}$ " "	7 " "

Steel Shoes are put up in kegs containing one hundred (100) pounds each, of one size of the Shape. One half the number of Shoes are forward, the other half hind; also, half are rights and half lefts, with four holes on the outside and three on the inside of each Shoe.

On large orders for horse railroad or other companies, we can vary from the standard sizes in the *length* of the Shoes when required, by having a little time to make them, if the quantity is large enough.

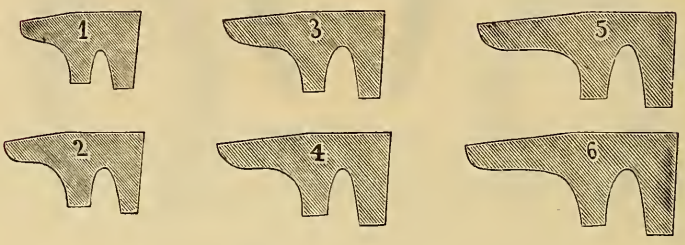
The old Shoes make the best of Toe Calks, and companies using the largest quantity of these Shoes save the entire expense for calk steel by working them up.

The steel being much lighter than iron Shoes, the kegs contain from 20 to 30 per cent. more.

BESSEMER STEEL HORSE-SHOE SHAPES.

ROLLED WITH GROOVE, READY FOR PUNCHING.

(IN SIX SIZES.)



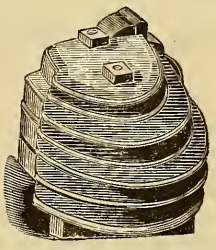
Hale's Patent.

Put up in bundles of about 100 pounds, 10 to 12 feet long.

Prices Subject to Change without Notice.

Sizes.	Weight per Foot.	Price per Pound.
No. 1	About 10½ oz.	6¾ cents.
2	" 12½	6¾ "
3	" 14½	6¾ "
4	" 16½	6¼ "
5	" 20	6¼ "
6	" 24	6¼ "

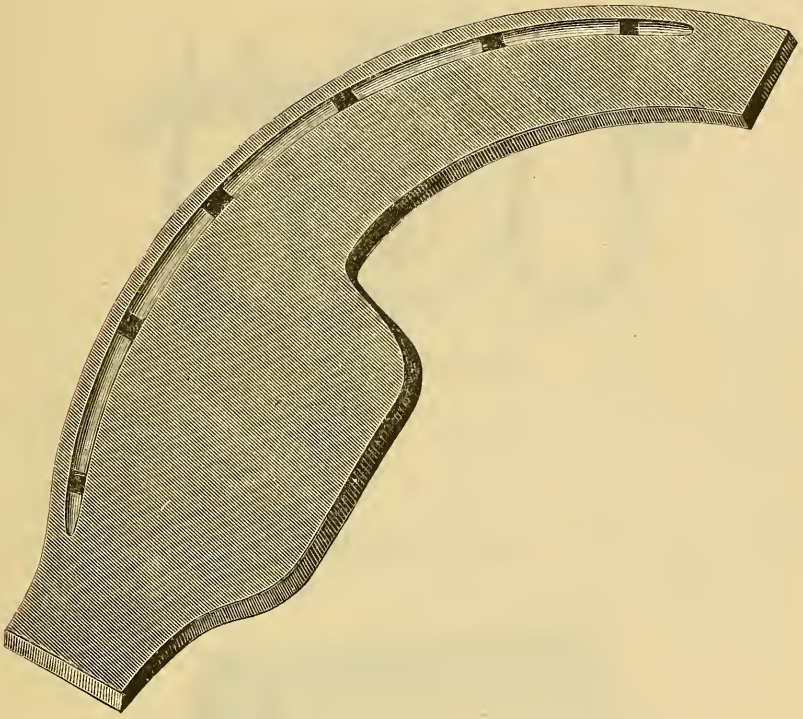
PORTABLE HORSE-SHOE FORMER.



The H. & J. Patent.

To facilitate the introduction and use of these patent shapes, the proprietors have invented the Patent Portable Horse-shoe Former, to which the attention of every horse-shoer is confidently invited. By its use an enormous saving of time and labor is effected in making shoes of all kinds and all sizes, but more particularly in making shoes of the Continuous Calked Steel Shapes, from which 250 to 300 shoes can be made in less time and with less labor than 100 can be made in the ordinary method. Price of the Former, with levers complete, and boxed for shipment, $5.00.

HAMILTON FORGED OX SHOE.



Special attention is called to the Forged Ox Shoe, illustrated above, which is made from the best *Ulster Iron*, forged under a trip hammer by an ingenious mechanical contrivance, making every shoe perfectly level, fitting the hoof better and easier than any hand made shoe. It is far superior to the machine shoe, made by pressing the material instead of forging, as is done by all other Ox Shoe machines.

Plates are also made for light work, the difference being that they are shorter, and that no provision is made for a heel calk as on the regular Shoe.

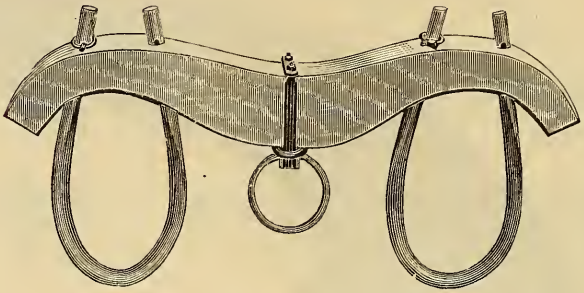
There are three sizes of the Shoes, and two sizes of the Plates made.

Every set contains sixteen pieces, enough for a yoke of oxen, at the following low prices:

No. 1 Shoes	80	cents per set.
2 "	85	" "
3 "	90	" "
Nos. 1, 2 and 3 Assorted Shoes	85	" "
No. 1 Plates	70	" "
2 "	70	" "

Packed in Boxes of 10 Sets each.

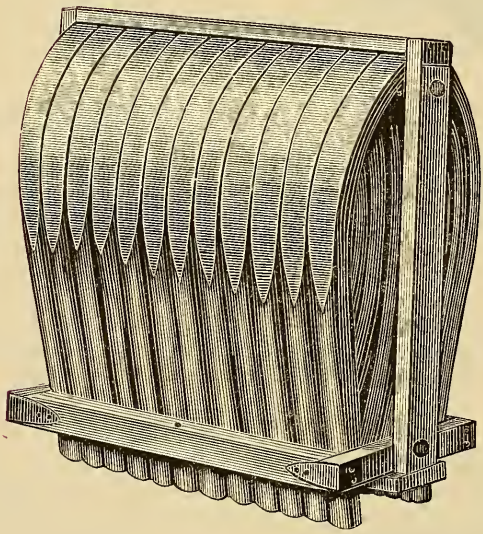
OX YOKES.



Finished and Ironed.

Price ..... $ per set.

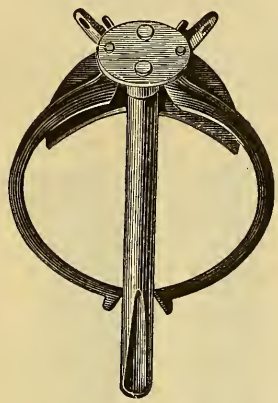
OX BOWS.



Finished.

Price ..... $ per dozen.

OX BOW PINS.

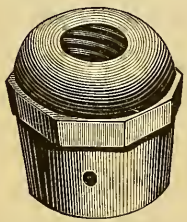


Hotchkiss Patent.

STYLES OF NOS. 1 AND 2.

No. 1.	For 1¾ in.	Bows,	Double	$15 00	per gross.
2.	" 2	"	"	16 50	"
3.	" 1¾	"	Single	12 00	"
4.	" 2	"	"	13 50	"

BRASS OX BALLS.



Heavy Octagon, Solid.

Nos.	1	2	3	4	5	12	
Price	$10 50	12 00	14 00	18 00	26 00	12 75	per gross.

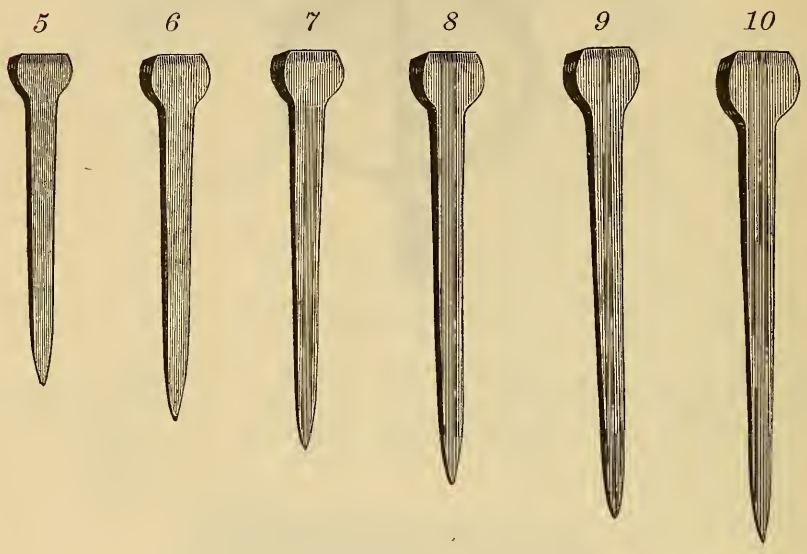
Octagon, Solid.

Nos	21	22	23	
Price	$9 00	10 00	11 00	per gross.

NORTH-WESTERN HORSE NAILS.

OLD STYLE.

Without Finished Points.



PRICE LIST.

Subject to Change without Notice.

Nos.	5	6	7	8	9	10	
Price	30	27	25	24	23	22	cents per pound.

DISCOUNTS.

Subject to Change without Notice.

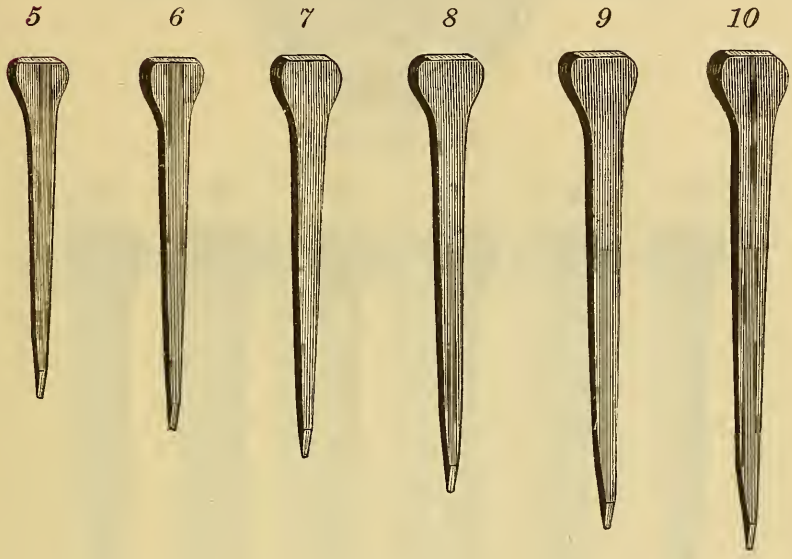
On orders of 1,000 pounds			5	per cent.	discount.
" " 5,000 "			7½	"	"
" " 10,000 "			10	"	"

Invoices will be rendered and settled at full price list, and discounts made and refunded on January 1st and July 1st, to parties whose purchases have entitled them to same.

NORTH-WESTERN HORSE NAILS.

NEW STYLE.

Pointed, Polished and Finished.



PRICE LIST.

Subject to Change without Notice.

Nos.	5	6	7	8	9	10	
Price	32	29	27	26	25	24	cents per pound.

DISCOUNTS.

Subject to Change without Notice.

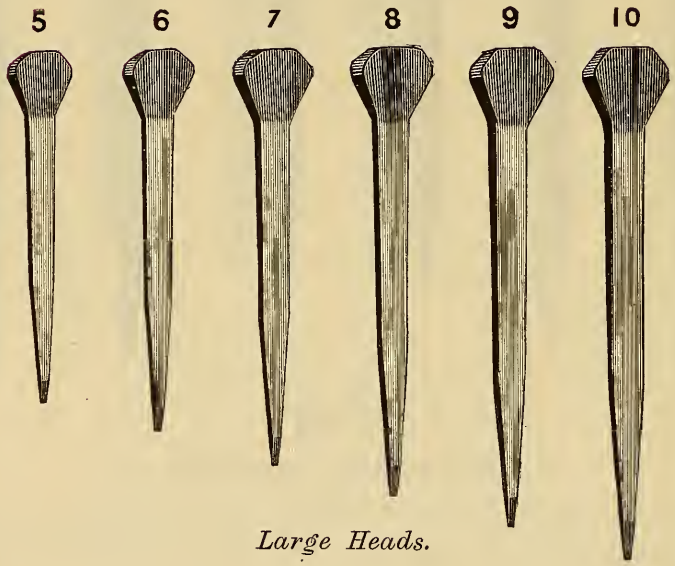
On orders of 1,000 pounds		5	per cent.	discount.
" " 5,000 "		7½	"	"
" " 10,000 "		10	"	"

Invoices will be rendered and settled at full price list, and discounts made and refunded on January 1st and July 1st, to parties whose purchases have entitled them to same.

STAR HORSE NAILS.

Pointed, ST. LOUIS AGRICULTURAL MECHANICAL ASSOCIATION ORGANIZED 1856 *Blued,*

And Finished.



Large Heads.

PRICE LIST.

Subject to Change without Notice.

Nos.	5	6	7	8	9	10	
Price	31	28	26	25	24	23	cents per pound.

DISCOUNTS.

Subject to Change without Notice.

On orders of	1,000 pounds	5	per cent.	discount.
" "	5,000 "	7½	"	"
" "	10,000 "	10	"	"

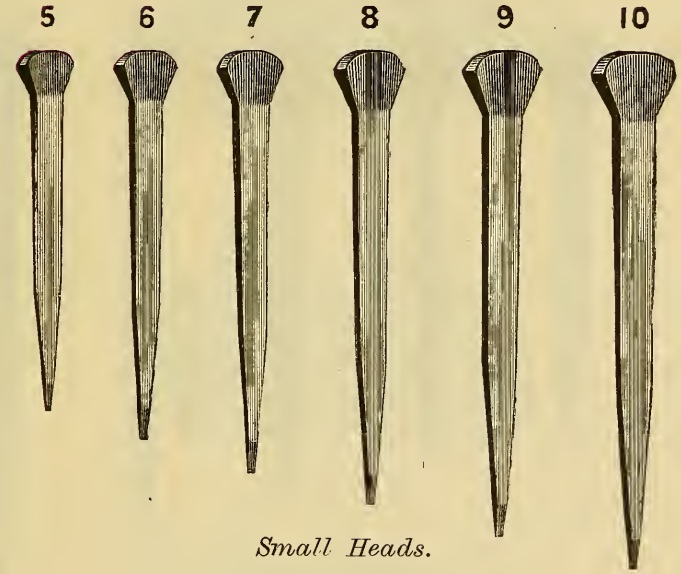
These Nails are made from the best Norway Iron, and are pointed and blued ready for driving.

STAR HORSE NAILS.

Pointed,

Blued,

And Finished.



Small Heads.

PRICE LIST.

Subject to Change without Notice.

Nos.	5	6	7	8	9	10	
Price	31	28	26	25	24	23	cents per pound.

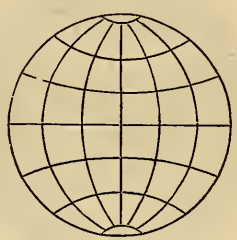
DISCOUNTS.

Subject to Change without Notice.

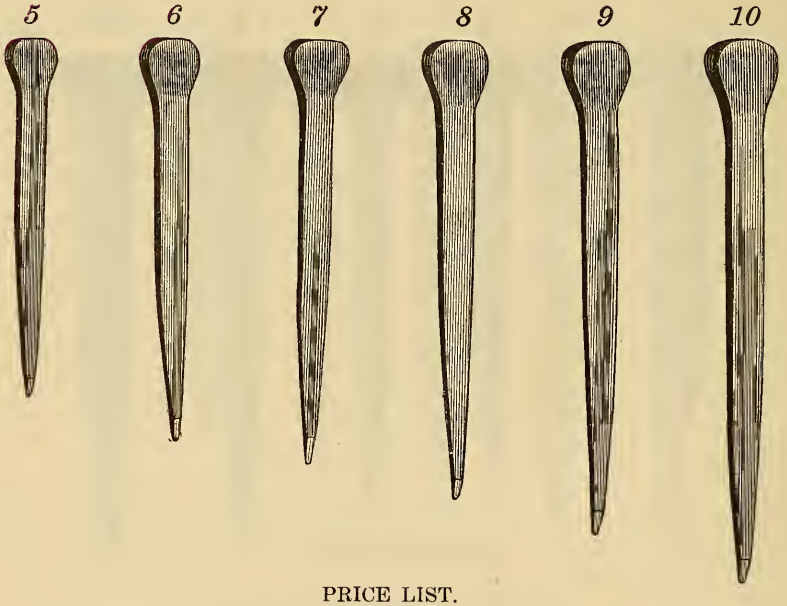
On orders of	1,000 pounds	5	per cent.	discount.
" "	5,000 "	7½	"	"
" "	10,000 "	10	"	"

These Nails are made from the best Norway Iron, and are pointed and blued ready for driving.

GLOBE HORSE NAILS.

Pointed,  *Polished,*

And Finished.



PRICE LIST.

Subject to Change without Notice.

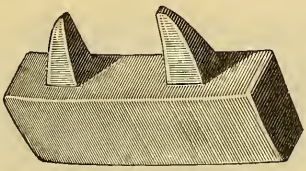
Nos	5	6	7	8	9	10	
Price	31	28	26	25	24	23	cents per pound.

DISCOUNT.

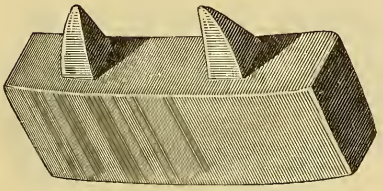
Subject to Change without Notice.

Orders for 1000 pounds at one time will be invoiced at 5 per cent. discount. Parties ordering in less quantity will be entitled to 5 per cent. discount at such time within the year as their orders shall amount to 1000 pounds, and thereafter 5 per cent. will be allowed on all further purchases during the year, regardless of quantity.

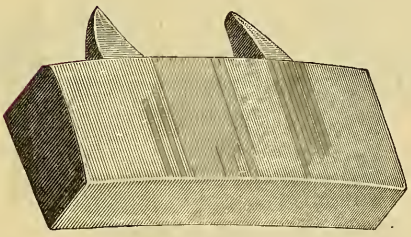
STEEL TOE CALKS.



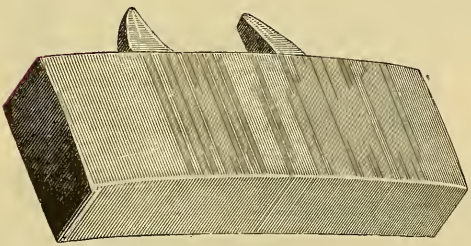
Size No. 1.



Size No. 2.



Size No. 3.



Size No. 4.

Price, Two Prong ..... 13 cents per pound.

Packed in Boxes of 25 Pounds each.

Cuts are full size.

STEEL TOE CALKS.

Size No. 1.

Size No. 2.

Size No. 3.

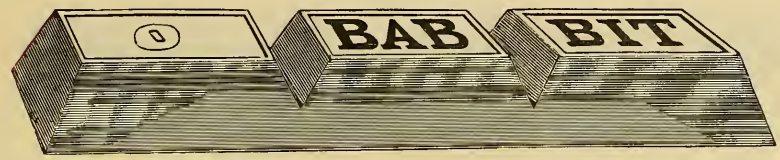
Size No. 4.

Price, One Prong ---------- 13 cents per pound.

Packed in Boxes of 25 Pounds each.

Cuts are full size.

BABBIT METAL.



No. 0—Low Grade ..... 15 cents per pound.

No. 1—Ordinary Grade ..... 20 cents per pound.

No. A—Medium Grade ..... 25 cents per pound.

No. A-1—Extra Grade ..... 35 cents per pound.

No. AA—Extra Fine Grade ..... 45 cents per pound.

Our Babbit Metal is made expressly for us, and warranted equal to any in the market.

IRON SASH WEIGHTS.

Round Pattern.

Weight	4 pounds,	diameter	1½ in.,	length	9¼ in.	5 cents	per pound.
"	4½ "	"	1½	"	10½	"	"
"	5 "	"	1½	"	11¼	"	"
"	5½ "	"	1½	"	12½	"	"
"	6 "	"	1½	"	13½	"	"
"	6½ "	"	1½	"	14	"	"
"	7 "	"	1½	"	14¾	"	"
"	7½ "	"	1½	"	16½	"	"
"	8 "	"	1½	"	17½	"	"
"	9 "	"	1½	"	19	"	"
"	10 "	"	1¾	"	16½	"	"
"	11 "	"	1¾	"	19	"	"
"	12 "	"	1¾	"	19½	"	"
"	13 "	"	1¾	"	20¾	"	"
"	14 "	"	1¾	"	22¼	"	"
"	15 "	"	1¾	"	24	"	"
"	16 "	"	1⅞	"	24	"	"
"	17 "	"	1⅞	"	25½	"	"
"	18 "	"	1⅞	"	27½	"	"
"	19 "	"	1⅞	"	29	"	"
"	20 "	"	1⅞	"	31	"	"

Can also furnish 8 and 12 pound weights with an eye at each end.

Square Pattern.

Can furnish Square Sash Weights, 2, 2¼ and 2½ inches; the 2 inch can be made any weight to 33 pounds; the 2¼ to 50 pounds; the 2½ to 60 pounds, at an advance of ¼ to ½ cent per pound on Round Weights, according to size of order.

Other than above sizes made to order at an advance of ½ to 1 cent per pound, according to size of order.

LEAD SASH WEIGHTS.

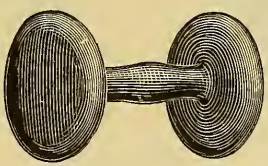
Lead Sash Weights, all sizes, Round or Square, made to order. Price 8½ to 11 cents per pound, according to size of order.

CAST IRON WASHERS.

Price ..... 6 cents per pound.

Furnished to order of any style pattern desired.

DUMB BELLS.



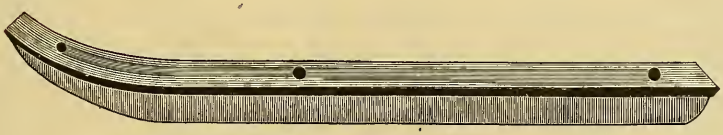
Any weight desired ..... 5 cents per pound.

CAST IRON SLEIGH SHOES.

Common.

Price ..... 5 cents per pound.

Length 36 in., average weight 71 pounds per set.
" 38 " " 73 " "
" 40 " " 75 " "
" 42 " " 77 " "

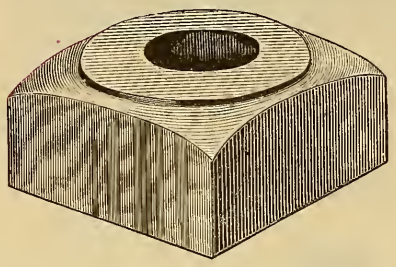


With Flange.

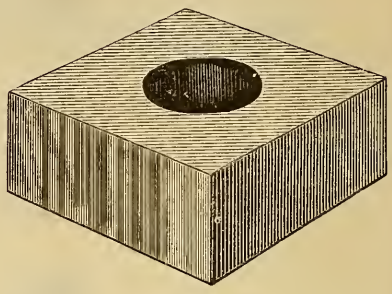
Price ..... 5 cents per pound.

Length 36 in., average weight 74 pounds per set.
" 38 " " 77 " "
" 40 " " 78 " "
" 42 " " 80 " "

SQUARE NUTS.



Hot Pressed.

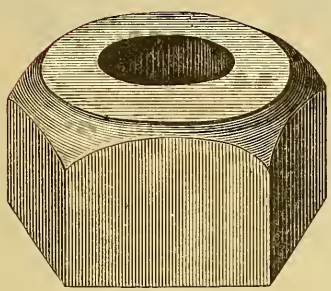


Cold Pressed.

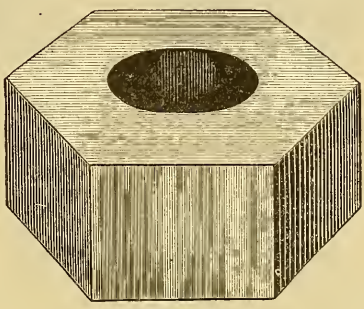
STANDARD LIST.

Size Square.	Thickness.	Diameter of Hole.	Size of Bolt.	Price per Pound.	Number in 100 Pounds.
INCH.	INCH.	INCH.	INCH.	CENTS.	AVERAGE.
11/32	5/32	3/32	1/8	50	30,000
1/3	3/16	5/32	1/8	30	15,000
11/32	1/4	7/32	1/4	20	7,500
1/2	5/16	9/32	5/16	17½	4,400
5/8	3/8	11/32	3/8	15	2,500
3/4	7/16	13/32	7/16	14	1,400
7/8	1/2	7/16	1/2	14	1,320
1	1/2	7/16	1/2	12	1,000
1	1/2	1/2	9/16	12	947
1 1/8	1/2	1/2	9/16	12	895
1 1/8	5/8	9/16	5/8	12	590
1 1/4	5/8	9/16	3/4	11½	500
1 3/8	3/4	21/32	3/4	11½	430
1 1/2	3/4	21/32	3/4	11	295
1 5/8	7/8	25/32	7/8	11	260
1 3/4	7/8	25/32	7/8	11	130
1 3/4	1	7/8	1	11	95
2	1	7/8	1	11	90
2	1 1/8	15/16	1 1/8	11	80
2 1/4	1 1/8	15/16	1 1/8	11	73
2 1/4	1 3/8	1 1/16	1 1/4	12	68
2 1/2	1 1/4	1 1/16	1 1/4	12	55
2 3/4	1 3/8	1 3/16	1 3/8	12	48
3	1 1/2	1 5/16	1 1/2	13	32
3 1/4	1 5/8	1 7/16	1 5/8	13	30
3 1/2	1 3/4	1 9/16	1 3/4	14	27
3 3/4	1 7/8	1 11/16	1 7/8	14	24
4	2	1 13/16	2	14	21

HEXAGON NUTS.



Hot Pressed.



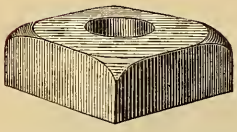
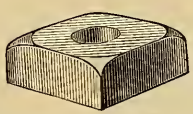
Cold Pressed.

STANDARD LIST.

Size Square.	Thickness.	Diameter of Hole.	Size of Bolt.	Price per Pound.	Number in 100 Pounds.
INCH.	INCH.	INCH.	INCH.	CENTS.	AVERAGE.
1/4	1/4	7/32	1/4	30	9,000
5/16	5/16	9/32	5/16	25	4,600
3/8	3/8	11/32	3/8	20	4,000
7/16	7/16	3/8	7/16	18	1,600
7/8	1/2	7/16	1/2	18	1,260
1	1/2	7/16	1/2	16	1,100
1 1/8	5/8	9/16	5/8	16	685
1 1/4	5/8	9/16	5/8	14 1/2	620
1 1/4	3/4	9/16	5/8	14 1/2	585
1 3/8	3/4	21/32	3/4	14 1/2	585
1 1/2	7/8	21/32	3/4	14	290
1 5/8	7/8	25/32	7/8	14	152
1 5/8	1	25/32	7/8	14	152
1 3/4	1	7/8	1	14	140
1 3/4	1 1/8	7/8	1	14	128
2	1 1/4	15/16	1 1/8	14	115
2 1/4	1 3/8	1 1/16	1 1/4	15	80
2 1/2	1 1/2	1 3/16	1 3/8	15	65
2 3/4	1 5/8	1 5/16	1 1/2	15	60
3	1 3/4	1 7/16	1 5/8	16	55
3 1/4	1 7/8	1 9/16	1 3/4	16	34
3 1/2	2	1 11/16	1 7/8	17	26
3 1/2	2	1 13/16	2	17	24

Sizes not enumerated above charged extra.

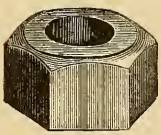
MACHINE FORGED NUTS.

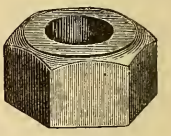
Square, Special Sizes.

STANDARD LIST.

Size Square.	Thickness.	Diameter of Hole.	Size of Bolt.	Price per Pound.	Number in 100 Pounds.
INCH.	INCH.	INCH.	INCH.	CENTS.	AVERAGE.
3/8	3/16	5/32	3/16	50	15,000
7/16	7/32	7/32	1/4	30	9,000
7/16	7/32	13/64	1/4	30	9,000
7/16	1/4	17/64	5/16	23	5,000
9/16	9/32	9/32	5/16	23	5,000
11/16	11/32	11/32	3/8	20	4,000
11/16	5/16	21/64	3/8	20	3,500
13/16	3/8	3/8	7/16	17	1,600
7/8	13/32	13/32	7/16	14	1,450
7/8	7/16	7/16	1/2	14	1,400
1	7/16	7/16	1/2	14	1,200

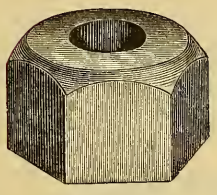


Hot Hammered Hexagon, Special Sizes.

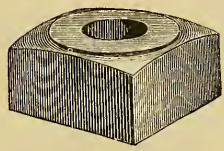


Size Square.	Thickness.	Diameter of Hole.	Size of Bolt.	Price per Pound.	Number in 100 Pounds.
INCH.	INCH.	INCH.	INCH.	CENTS.	AVERAGE.
5/8	3/8	21/64	3/8	30	7,000
3/4	7/16	3/8	7/16	24	4,500
7/8	1/2	7/16	1/2	20	1,890
1	9/16	1/2	9/16	18	1,500
1 1/8	5/8	9/16	5/8	18	957
1 1/4	3/4	21/32	3/4	16 1/2	700
1 1/2	7/8	49/64	7/8	11	300
1 3/4	1	7/8	1	11	257
2	1 1/8	1	1 1/8	11	165
2 1/4	1 1/4	1 3/32	1 1/4	12	115
2 1/2	1 3/8	1 7/32	1 3/8	12	85
2 3/4	1 1/2	1 5/16	1 1/2	12 1/2	55

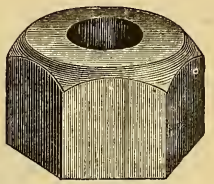
BRIDGE BOLT NUTS.



Hexagon.



Square.



Hexagon.

EXTRA SIZES HOT PRESSED.

Size Square.	Thickness.	Diameter of Hole.	Size of Bolt.	Price per Pound.	
				Square.	Hexagon.
INCH.	INCH.	INCH.	INCH.	CENTS.	CENTS.
3/4	7/16	11/32	3/8	18	25
7/8	1/2	13/32	7/16	14	20
1	5/8	7/16	1/2	13	19
1 1/8	3/4	9/16	5/8	13	19
1 1/4	7/8	21/32	3/4	12½	17½
1 1/2	1	25/32	7/8	12	17
1 5/8	1 1/8	7/8	1	12	17
1 3/4	1 1/4	15/16	1 1/8	12	17
2	1 3/8	1 1/16	1 1/4	12	17
2 1/4	1 1/2	1 3/16	1 3/8	13	18
2 1/2	1 5/8	1 5/16	1 1/2	13	18
2 3/4	1 3/4	1 7/16	1 5/8	13	18
3	1 7/8	1 9/16	1 3/4	13½	18½
3 1/4	2	1 11/16	1 7/8	13½	18½
3 1/2	2 1/8	1 13/16	2	15	20
4 1/4	2 1/8	2	2 1/4	18	23
4 1/2	2 1/4	2 3/16	2 1/2	18	23
4 3/4	2 3/8	2 7/16	2 3/4	18	23
5	2 1/2	2 5/8	3	18	23

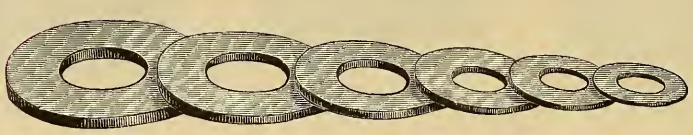
SQUARE NUTS

FOR

STEAMBOAT STIRRUP BOLTS.

Size Square.	Thickness.	Diameter of Hole	Size of Bolt.	Price pr Pound
INCH.	INCH.	INCH.	INCH.	CENTS.
1 3/4	5/8	9/16	5/8	11½
1 3/4	3/4	11/16	3/4	11½
2	3/4	11/16	3/4	11½
2	7/8	13/16	7/8	11½

IRON WASHERS.



STANDARD PRICE LIST.

Diameter.	Size of Hole.	Thickness of Gauge.	Size of Bolt.	Price per Pound.	Number in 150 pounds.
INCH.	INCH.	NUMBER.	INCH.	CENTS.	AVERAGE.
1/2	3/16	18	1/8	34	85,000
1/2	13/64	18	3/16	34	83,000
1/2	7/32	18	5/16	28	82,000
1/2	1/4	18	3/16	28	80,000
5/8	9/32	16	1/4	24	36,000
5/8	5/16	16	1/4	24	34,285
3/4	5/16	16	1/4	21	22,000
3/4	11/32	16	5/16	21	20,500
3/4	3/8	16	5/16	21	19,000
7/8	3/8	16	5/16	18	18,500
7/8	7/16	16	3/8	18	14,500
1	7/16	14	3/8	16	10,550
1	1/2	14	7/16	16	9,000
1 1/8	1/2	14	7/16	14	8,000
1 1/4	1/2	14	7/16	13	7,500
1 1/4	9/16	14	1/2	13	5,500
1 3/8	9/16	12	1/2	13	4,500
1 1/2	5/8	12	9/16	13	3,850
1 1/2	11/16	10	5/8	13	2,800
1 3/4	11/16	10	5/8	12 1/2	2,500
1 3/4	3/4	10	11/16	12 1/2	2,000
1 3/4	13/16	10	3/4	12 1/2	1,850
2	13/16	10	3/4	12 1/2	1,600
2	15/16	9	7/8	12 1/2	1,450
2 1/4	15/16	9	7/8	12	1,300
2 1/4	1 1/16	9	1	12	1,250
2 1/4	1 1/8	9	1	12	1,050
2 1/2	1 1/16	9	1	12	950
2 1/2	1 1/8	9	1	12	870
2 1/2	1 1/4	9	1 1/8	12	780
2 3/4	1 1/4	9	1 1/8	12	700
3	1 3/8	9	1 1/4	12	550
3 1/2	1 1/2	9	1 3/8	12	450
3 1/2	1 5/8	8	1 1/2	12	390
4	1 7/8	8	1 3/4	12	300
4	2 1/8	8	2	12	250

RIVETING BURRS.

Packed in 1 Pound Boxes.

For Nos. 6, 7 and 8 Wire Rivets	35	cents per pound.
" $\frac{3}{16}$ in. Rivets	34	" "
" $\frac{1}{4}$ "	32	" "

CARRIAGE WASHERS.

Packed in 1 Pound Boxes.

For $\frac{1}{8}$ in. Bolt,	2,000	Washers	in	1	pound	50	cents	per pound.
" $\frac{3}{16}$ "	1,100	"		1	"	40	"	"
" $\frac{1}{4}$ "	800	"		1	"	35	"	"
" $\frac{5}{16}$ "	600	"		1	"	30	"	"
" $\frac{3}{8}$ "	500	"		1	"	25	"	"

Our Carriage Washers are cut out of Russia Iron, which makes them cheaper, lighter and better for this purpose than the ordinary washers.

REMARKS.

We have adopted the following system of *packing* Nuts and Washers, *without extra charge*, for the convenience of our customers desiring to purchase them in small quantities, viz.:

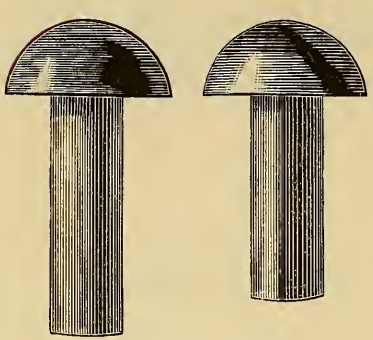
Nuts, Square and Hexagon, $\frac{1}{4}$ to 1 in., in 5 and 10 pound boxes.

Washers, from $\frac{1}{8}$ to $\frac{3}{8}$ in., in 1 pound boxes; also, from $\frac{1}{4}$ to 1 in. in 5 and 10 pound boxes.

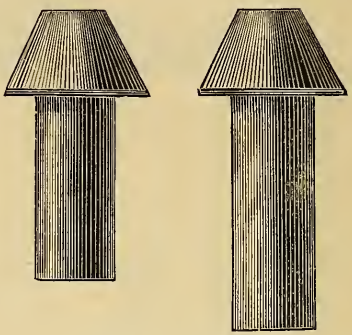
Each box will be properly labeled with the size and weight.

The regular list prices on both Nuts and Washers will be used, and the discounts will be governed according to the market value.

TANK RIVETS.



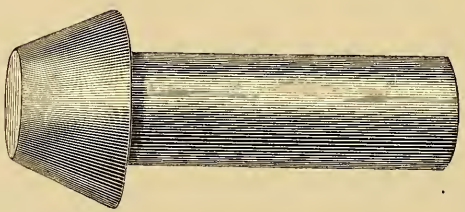
Round Heads.



Cone Heads.

$\frac{5}{16}$ in. diameter, all lengths	.....	12½	cents per pound.
$\frac{3}{8}$ " "	.....	11½	" "

BOILER RIVETS.



½ in. diameter, all lengths	.....	8	cents per pound.
$\frac{5}{8}$ " "	.....	8	" "
$\frac{3}{4}$ " "	.....	8	" "

Tank and Boiler Rivets are usually put in kegs of 100 to 150 pounds.

NORWAY IRON RIVETS.

Flat Head.

Oval Head.

Round Head.

Cone Head.

PRICE PER POUND.

Size Wire	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{11}{32}$	$\frac{3}{8}$	Wire.
All lengths	14	13	12½	11½	11½	cents.

Size Wire Nos.	1	2	3	4	5	6	Wire.
All lengths	12½	12½	13	13	14	14	cents.

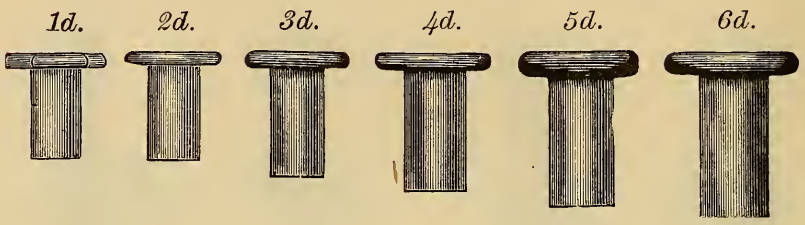
Smaller than No. 6 Wire.

PRICE PER POUND.

Size of Wire.	$\frac{3}{16}$ in.	No. 7.	No. 8.	No. 9.	No.10.	No.11.	No.12.	No.13.	No.14.
	CENTS.	CENTS.	CENTS.	CENTS.	CENTS.	CENTS.	CENTS.	CENTS.	CENTS.
$\frac{3}{32}$ in.	25	25	25	30	35	40	50	60	60
$\frac{1}{8}$	24	24	24	29	33	40	50	60	60
$\frac{5}{32}$	23	23	23	27	31	36	45	50	60
$\frac{3}{16}$	22	22	22	25	29	33	39	45	58
$\frac{7}{32}$	20	20	21	23	27	30	35	40	56
$\frac{1}{4}$	19	19	19	21	24	28	30	35	54
$\frac{9}{32}$	18	18	19	21	24	27	30	35	52
$\frac{5}{16}$	18	18	19	21	23	26	29	33	50
$\frac{11}{32}$	17	17	18	21	22	25	27	31	45
$\frac{3}{8}$	17	17	17	20	21	24	24	29	40
$\frac{13}{32}$	16	17	17	20	20	23	24	29	37
$\frac{7}{16}$	16	17	17	19	19	22	24	29	34
$\frac{15}{32}$	15	16	16	19	19	21	23	27	30
$\frac{1}{2}$ and longer	14	15	16	18	19	20	21	25	27

Rivets made from Wire smaller than No. 14, all lengths, 70 cents per pound.

NORWAY IRON RIVETS.



COOPER'S RIVETS, IN BULK.

PRICE PER POUND.

Size	1d.	2d.	3d.	4d.	5d.	6d.
Price	13½	13½	12½	12½	11½	11½ cents.

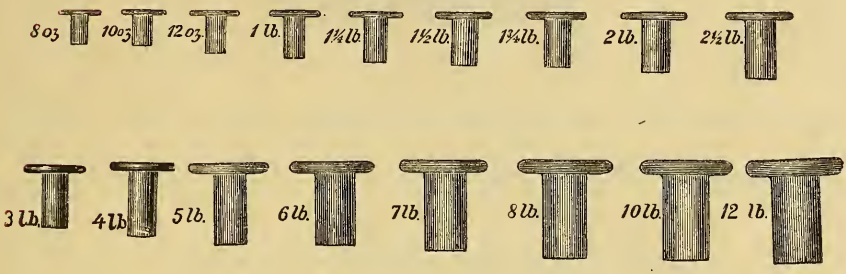
COUNTERSUNK HEAD RIVETS.

FOR REAPERS AND MOWING MACHINES.

PRICE PER POUND.

Size of Wire.	¼	$\frac{5}{16}$	4	5	5½	6	7	8
⅜ in. long	16	17	15	16	16	16	17	18
$\frac{7}{16}$ "	15	16	14	15	15	15	16	17
½ "	14	15	13	14	14	14	15	16
$\frac{9}{16}$ "	14	15	13	14	14	14	15	16
⅝ "	14	15	13	14	14	14	15	16
$\frac{11}{16}$ "	14	15	13	14	14	14	15	16
¾ "	14	15	13	14	14	14	15	16
⅞ "	14	15	13	14	14	14	15	16
1 "	14	15	13	14	14	14	15	16
1⅛ "	14	15	13	14	14	14	15	16
1¼ "	14	15	13	14	14	14	15	16

NORWAY IRON RIVETS.



IN PAPERS OF 1,000 RIVETS EACH.

Price per Paper.

BLACK.

SIZE.	PRICE.
8 ounces	$0 28
10 "	31
12 "	34
1 pound	38
1¼ "	42
1½ "	46
1¾ "	50
2 "	55
2½ "	63
3 "	70
4 "	85
5 "	1 00
6 "	1 20
7 "	1 35
8 "	1 50
9 "	1 65
10 "	1 80
12 "	2 10
14 "	2 40

IN BULK.

FLAT-HEAD RIVETS ONLY.

Price per Pound.

BLACK.

SIZE.	PRICE.
8 ounces	$0 38
10 "	34
12 "	31
1 pound	26
1¼ "	23
1½ "	21
1¾ "	20
2 "	19
2½ "	18
3 "	16½
4 "	15
5 "	14
6 "	14
7 "	13½
8 "	13½
9 "	13
10 "	13
12 "	12½
14 "	12

Above prices are for common Flat-Head regular-size Rivets only.

NORWAY IRON RIVETS.

Wagon Box Rivets.

1/4	in. diameter, all lengths, Machine-made	15	cents per pound.
1/4	" " Hand "	20	" "

Our Hand-made Rivets have Heads 1 in. diameter.

Wagon Box Nail.

3/16	in. diameter, all lengths, Hand-pointed	20	cents per pound.
1/4	" " "	18	" "

California Tire Rivet and Clinch Ring.

3/16	in. diameter, all lengths	20	cents per pound.
1/4	" "	19	" "
5/16	" "	18	" "
Clinch Rings, to fit above sizes		30	" "

Our California Tire Rivets are all made by hand, with large heavy head, expressly for the California Wagons, and Clinch Rings to suit.

NORWAY IRON RIVETS.

Tinned.

IN PAPERS OF 1000 RIVETS EACH.

Weight ---	8	10	12 oz.	1	1¼	1½	1¾ lb.
Price-----	33	36	40	45	50	55	60 cents per paper.
Weight ---	2	2½	3	4	5	6	7 lb.
Price-----	65	75	90	120	140	160	180 cents per paper.

IN BULK.

Weight ---	8	10	12 oz.	1	1¼	1½	1¾ lb.
Price-----	45	39½	36½	31	27½	25½	23¾ cents per pound.
Weight ---	2	2½	3	4	5	6	7 lb.
Price-----	22½	21	21	21	19½	18½	18 cents per pound.

Tinned Trunk.

IN BULK OR PAPERS.

¼	in. long, No. 9 wire	27	cents per pound.
5/16	" "	27	" "
3/8	" "	26	" "
7/16	" "	25	" "
15/32	" "	25	" "
½	and longer	24	" "

Tinned Shoe.

IN BULK OR PAPERS.

8/32	in. long, No. 13 wire	41	cents per pound.
9/32	" "	41	" "
10/32	" "	39	" "
11/32	" "	37	" "
12/32	" "	35	" "

Tinned Iron Belt.

IN BULK.

3/8	in. long, No. 8 wire	23	cents per pound.
15/32	" "	22	" "

Copper and Brass Rivets and Burrs.

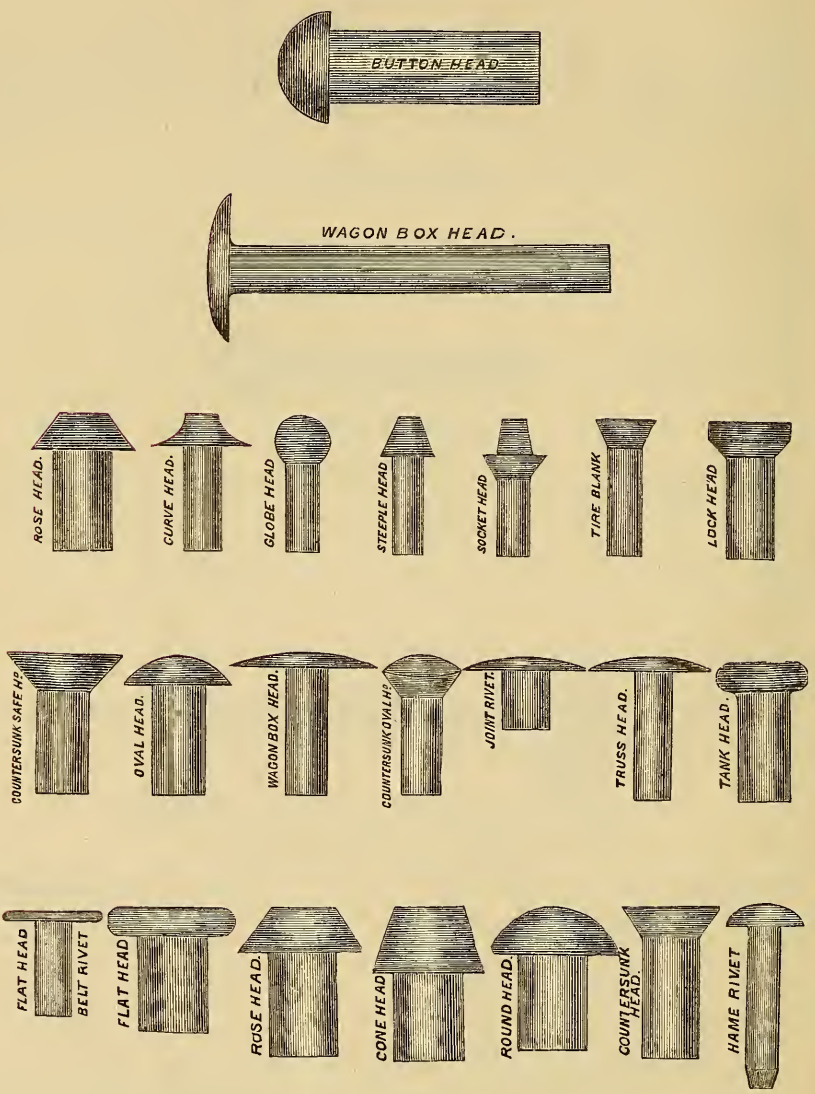
IN BULK OR PAPERS.

Any style head and any length.

No. 7	wire	cents per pound.
8	"	" "
9	"	" "
10	"	" "
11	"	" "
12	"	" "
13	"	" "
14	"	" "
15	"	" "

RIVETS.

Illustrations showing Different Styles of Heads.



IRON RIVETS.

WEIGHT PER 100 RIVETS.

Length under Heads.	Diameter.						
	3/16	1/4	5/16	3/8	1/2	5/8	3/4
1/2 in.	.594	1.207	1.876	3.300	-----	-----	-----
5/8	.720	1.379	2.062	3.687	-----	-----	-----
3/4	.846	1.551	2.248	4.074	-----	-----	-----
7/8	.972	1.723	2.434	4.461	-----	-----	-----
1	1.098	1.895	2.620	4.848	9.66	16.79	26.49
1 1/8	1.224	2.067	2.806	5.235	10.34	17.86	27.99
1 1/4	1.350	2.238	2.992	5.616	11.04	18.96	29.61
1 3/8	1.476	2.410	3.178	6.003	11.73	20.03	31.13
1 1/2	1.602	2.582	3.364	6.402	12.43	21.04	32.74
1 5/8	1.728	2.754	3.550	6.789	13.12	22.11	34.25
1 3/4	1.854	2.926	3.736	7.179	13.81	23.21	35.86
1 7/8	1.984	3.098	3.922	7.566	14.50	24.28	37.37
2	2.106	3.269	4.108	7.956	15.19	25.48	38.99
2 1/8	2.232	3.441	4.294	8.343	15.88	26.56	40.40
2 1/4	2.358	3.613	4.480	8.733	16.57	27.65	42.11
2 3/8	2.484	3.785	4.666	9.120	17.26	28.73	43.67
2 1/2	2.610	3.957	4.852	9.511	17.95	29.82	45.24
2 5/8	2.736	4.129	5.038	9.898	18.64	30.90	46.80
2 3/4	2.862	4.301	5.224	10.29	19.33	31.99	48.36
2 7/8	2.988	4.473	5.410	10.67	20.02	33.08	49.92
3	3.114	4.644	5.096	11.06	20.71	34.18	51.49
3 1/8	3.240	4.816	5.782	11.44	21.40	35.27	53.05
3 1/4	3.366	4.988	5.968	11.84	22.09	36.35	54.61
3 3/8	3.492	5.160	6.154	12.23	22.78	37.44	56.17
3 1/2	3.618	5.332	6.340	12.62	23.48	38.52	57.74
3 5/8	3.744	5.504	6.526	13.01	24.17	39.60	59.30
3 3/4	3.870	5.676	6.712	13.39	24.86	40.69	60.86
3 7/8	3.996	5.848	6.898	13.78	25.55	41.78	62.42
4	4.022	6.019	7.084	14.17	26.24	42.87	63.99
4 1/8	4.148	6.191	7.270	14.56	26.93	43.94	65.55
4 1/4	4.274	6.393	7.456	14.95	27.62	45.01	67.11
4 1/2	4.526	6.565	7.828	15.73	29.20	47.15	70.23
4 3/4	4.778	7.081	8.200	16.51	30.78	49.29	73.35
5	5.030	7.425	8.572	17.29	32.36	51.43	76.47
5 1/4	5.282	7.769	8.944	18.07	33.94	53.57	79.59
5 1/2	5.534	8.113	9.316	18.85	35.52	55.71	82.71
5 3/4	5.756	8.457	9.688	19.63	37.10	57.85	85.83
6	6.008	8.801	10.060	20.41	38.68	59.99	88.95

RANKINE'S RIVETING RULES.

Diameter of Rivet for Plates less than 1/2 inch thick, to be equal to twice the thickness of the Plate. For Plates 1/2 inch thick and upwards, 1 1/2 times thickness of Plate. The length of rivet iron required to make the "head," equals 2 1/2 times the diameter of the Rivet.

BOILER-MAKER'S RULE.

Diameter of Rivet equals twice the thickness of the Plate; the pitch equals 2 1/2 to 3 diameters of the Rivet. Lap for single joints equals 3 diameters. Laps for double joints equals 5 diameters.

REFINED CARRIAGE BOLTS.

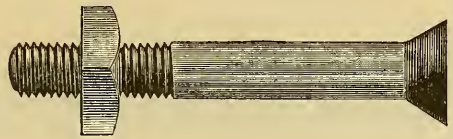
WITH OVAL OR BEVEL HEADS.

Revised and Adopted June 11, 1873.

PRICE PER 100 BOLTS.

Length.	3/16 in.	1/4 in.	5/16 in.	3/8 in.	7/16 in.	1/2 in.	9/16 in.	5/8 in.
1 in.	$2 40	$2 40	$3 00	-----	-----	-----	-----	-----
1 1/4	2 40	2 40	3 00	$4 00	-----	-----	-----	-----
1 1/2	2 40	2 40	3 00	4 00	$6 00	$7 25	-----	-----
1 3/4	2 45	2 45	3 10	4 00	6 00	7 25	-----	-----
2	2 50	2 50	3 20	4 00	6 00	7 25	-----	-----
2 1/4	2 55	2 55	3 30	4 15	6 20	7 50	-----	-----
2 1/2	2 60	2 60	3 40	4 30	6 40	7 75	-----	-----
2 3/4	2 65	2 65	3 50	4 45	6 60	8 00	-----	-----
3	2 70	2 70	3 60	4 60	6 80	8 25	$15 00	$15 00
3 1/4	2 75	2 75	3 70	4 75	7 00	8 50	15 40	15 40
3 1/2	2 80	2 80	3 80	4 90	7 20	8 75	15 80	15 80
3 3/4	----	2 85	3 90	5 05	7 40	9 00	16 20	16 20
4	----	2 90	4 00	5 20	7 60	9 25	16 60	16 60
4 1/4	----	2 95	4 10	5 35	7 80	9 50	17 00	17 00
4 1/2	----	3 00	4 20	5 50	8 00	9 75	17 40	17 40
4 3/4	----	3 05	4 30	5 65	8 20	10 00	17 80	17 80
5	----	3 10	4 40	5 80	8 40	10 25	18 20	18 20
5 1/4	----	3 15	4 50	5 95	8 60	10 50	18 60	18 60
5 1/2	----	3 20	4 60	6 10	8 80	10 75	19 00	19 00
5 3/4	----	3 25	4 70	6 25	9 00	11 00	19 40	19 40
6	----	3 30	4 80	6 40	9 20	11 25	19 80	19 80
6 1/4	----	----	4 90	6 55	9 40	11 50	20 20	20 20
6 1/2	----	----	5 00	6 70	9 60	11 75	20 60	20 60
7	----	----	5 20	7 00	10 00	12 25	21 40	21 40
7 1/2	----	----	5 40	7 30	10 40	12 75	22 20	22 20
8	----	----	5 60	7 60	10 80	13 25	23 00	23 00
8 1/2	----	----	5 80	7 90	11 20	13 75	23 80	23 80
9	----	----	6 00	8 20	11 60	14 25	24 60	24 60
9 1/2	----	----	6 20	8 50	12 00	14 75	25 40	25 40
10	----	----	6 40	8 80	12 40	15 25	26 20	26 20
11	----	----	----	9 40	13 20	16 25	27 80	27 80
12	----	----	----	10 00	14 00	17 25	29 40	29 40
13	----	----	----	----	14 80	18 25	31 00	31 00
14	----	----	----	----	15 60	19 25	32 60	32 60
15	----	----	----	----	-----	20 25	34 20	34 20
16	----	----	----	-----	-----	21 25	35 80	35 80

REFINED IRON TIRE BOLTS.



Revised and Adopted June 11, 1873.

PRICE PER 100 BOLTS.

Subject to Change without Notice.

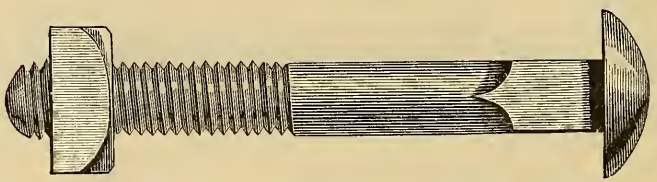
Length.	1/8 in.	3/16 in.	1/4 in.	5/16 in.	3/8 in.
1 in.	$1 90	$1 90	$1 90	....	....
1 1/4	1 90	1 90	1 90	$2 90	$3 70
1 1/2	1 90	1 90	1 90	2 90	3 70
1 3/4	1 95	1 95	1 95	2 90	3 70
2	2 00	2 00	2 00	2 90	3 70
2 1/4	....	2 05	2 05	3 00	3 82
2 1/2	....	2 10	2 10	3 10	3 95
2 3/4	....	2 15	2 15	3 20	4 07
3	....	2 20	2 20	3 30	4 20
3 1/4	....	2 25	2 25	3 40	4 32
3 1/2	....	2 30	2 30	3 50	4 45
3 3/4	....	....	2 35	3 60	4 57
4	....	....	2 40	3 70	4 70
4 1/4	....	....	2 45	3 80	4 82
4 1/2	....	....	2 50	3 90	4 95
4 3/4	....	....	....	4 00	5 20
5	....	....	....	4 00	5 20

SLEIGH SHOE BOLTS.

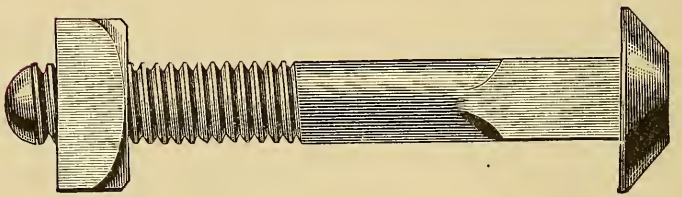
REFINED IRON.

Refined Iron Sleigh Shoe Bolts are same list and discount as Refined Iron Carriage Bolts.

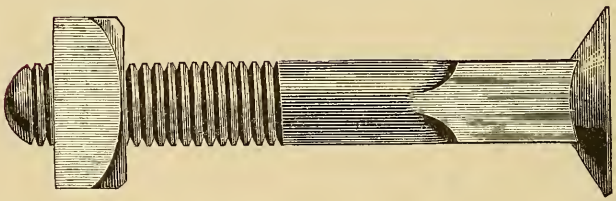
CARRIAGE BOLTS.



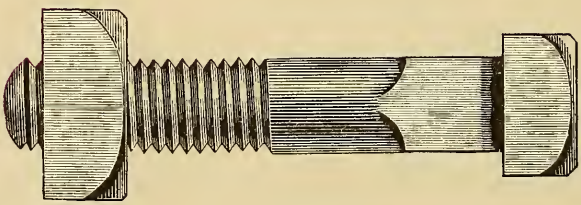
Oval Head.



Bevel Head.



Countersunk Head.



Square Head.

RUSSELL, BURDSALL & WARD'S

CARRIAGE BOLTS.

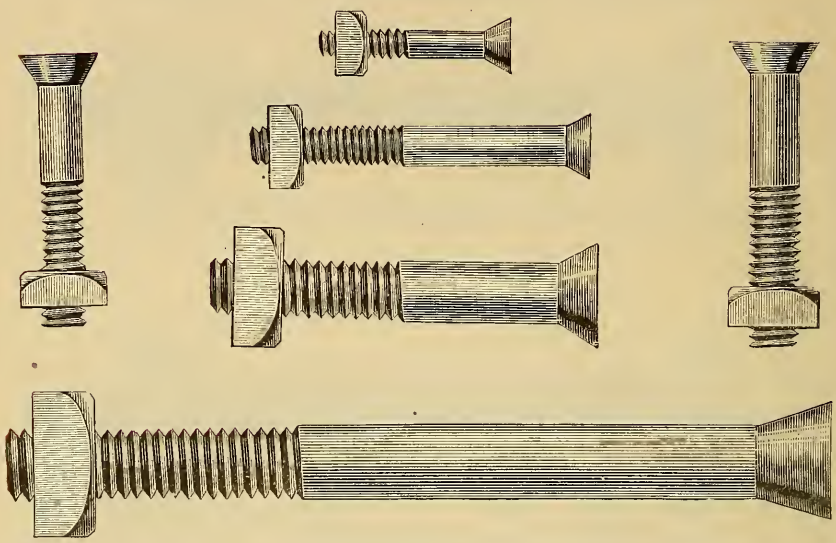
With Oval, Bevel, Countersunk or Square Heads.

PRICE PER 100 BOLTS.

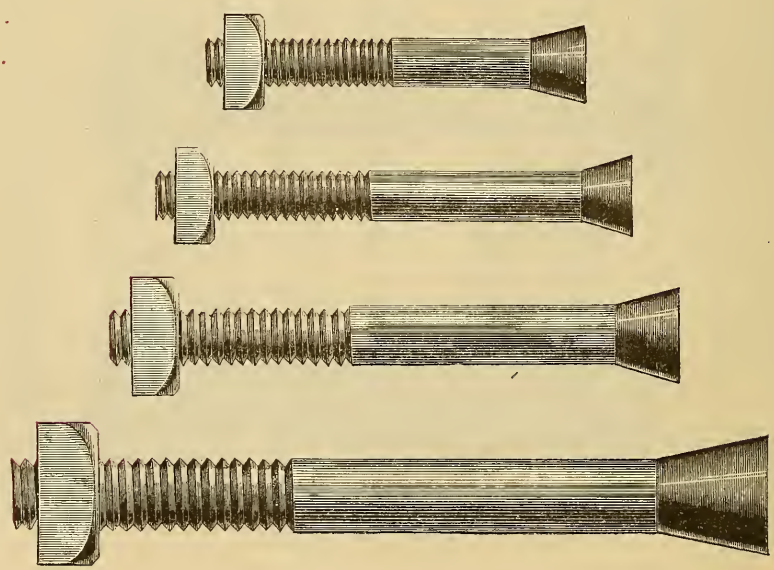
Length.	3/16 in.	1/4 in.	5/16 in.	3/8 in.	7/16 in.	1/2 in.	9/16 in.	5/8 in.
1 in.	$2 40	$2 40	----	----	----	----	------	------
1 1/4	2 40	2 40	$2 70	$3 60	----	----	------	------
1 1/2	2 40	2 40	2 70	3 60	$5 10	----	------	------
1 3/4	2 45	2 45	2 80	3 70	5 25	$7 00	------	------
2	2 50	2 50	2 90	3 70	5 40	7 20	$10 50	$11 63
2 1/4	2 55	2 55	3 00	3 82	5 55	7 40	10 80	12 00
2 1/2	2 60	2 60	3 10	3 95	5 70	7 60	11 00	12 37
2 3/4	2 65	2 65	3 20	4 08	5 85	7 80	11 20	12 63
3	2 70	2 70	3 30	4 20	6 00	8 00	11 40	13 00
3 1/4	2 75	2 75	3 40	4 32	6 15	8 20	11 60	13 38
3 1/2	2 80	2 80	3 50	4 45	6 30	8 40	11 80	13 75
3 3/4	----	2 85	3 60	4 58	6 45	8 60	12 00	14 12
4	----	2 90	3 70	4 70	6 60	8 80	12 20	14 50
4 1/4	----	2 95	3 80	4 83	6 75	9 00	12 40	14 88
4 1/2	----	3 00	3 90	4 95	6 90	9 20	12 60	15 25
4 3/4	----	3 05	4 00	5 07	7 05	9 40	12 80	15 62
5	----	3 10	4 10	5 20	7 20	9 60	13 00	16 00
5 1/2	----	3 20	4 30	5 45	7 50	10 00	13 50	16 75
6	----	3 30	4 50	5 70	7 80	10 40	14 00	17 50
6 1/2	----	3 40	4 70	5 95	8 10	10 80	14 50	18 25
7	----	3 50	4 90	6 20	8 40	11 20	15 00	19 00
7 1/2	----	3 60	5 10	6 45	8 70	11 60	15 50	19 75
8	----	3 70	5 30	6 70	9 00	12 00	16 00	20 50
8 1/2	----	3 80	5 50	6 95	9 30	12 40	16 50	21 25
9	----	3 90	5 70	7 20	9 60	12 80	17 00	22 00
9 1/2	----	4 00	5 90	7 45	9 90	13 20	17 50	22 75
10	----	4 10	6 10	7 70	10 20	13 60	18 00	23 50
11	----	----	6 30	8 20	10 80	14 40	19 00	25 00
12	----	----	6 50	8 70	11 40	15 20	20 00	26 50
13	----	----	----	9 20	12 00	16 00	21 00	28 00
14	----	----	----	9 70	12 60	16 80	22 00	29 50
15	----	----	----	10 20	13 20	17 60	23 00	31 00
16	----	----	----	-----	-----	18 40	24 00	32 50

TIRE AND SLEIGH BOLTS.

Tire.



Sleigh.



RUSSELL, BURDSALL & WARD'S

TIRE BOLTS.

PRICE PER 100 BOLTS.

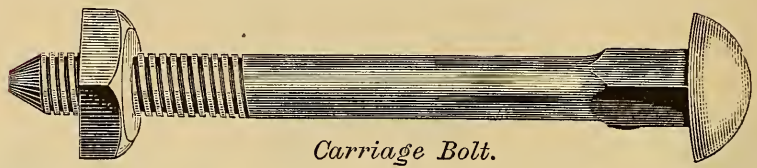
Length.	1/8 in.	3/16 in.	1/4 in.	5/16 in.	3/8 in.	7/16 in.	1/2 in.
1 in.	$1 40	$1 40	$1 40	$2 40	----	----	----
1 1/4	1 40	1 40	1 40	2 40	----	----	----
1 1/2	1 40	1 40	1 40	2 40	$3 00	$4 40	$5 40
1 3/4	1 45	1 45	1 45	2 45	3 10	4 55	5 60
2	1 50	1 50	1 50	2 50	3 20	4 70	5 80
2 1/4	1 55	1 55	1 55	2 58	3 30	4 85	6 00
2 1/2	1 60	1 60	1 60	2 65	3 40	5 00	6 20
2 3/4	1 65	1 65	1 65	2 73	3 50	5 15	6 40
3	1 70	1 70	1 70	2 80	3 60	5 30	6 60
3 1/4	----	----	1 75	2 88	3 70	5 45	6 80
3 1/2	----	----	1 80	2 95	3 80	5 60	7 00
3 3/4	----	----	1 85	3 03	3 90	5 75	7 20
4	----	----	1 90	3 10	4 00	5 90	7 40
4 1/4	----	----	----	3 18	4 10	6 05	7 60
4 1/2	----	----	----	3 25	4 20	6 20	7 80
4 3/4	----	----	----	3 33	4 30	6 35	8 00
5	----	----	----	3 40	4 40	6 50	8 20
5 1/2	----	----	----	----	4 60	6 80	8 60
6	----	----	----	----	4 80	7 10	9 00
6 1/2	----	----	----	----	5 00	7 40	9 40
7	----	----	----	----	5 20	7 70	9 80

CUTTER AND SLEIGH-SHOE BOLTS.

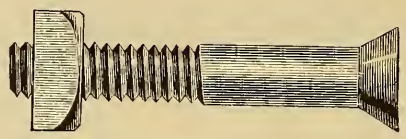
PRICE PER 100 BOLTS.

Length.	3/16 in.	1/4 in.	5/16 in.	3/8 in.	7/16 in.
1 1/4 in.	$1 40	$1 40	$2 40	----	----
1 1/2	1 40	1 40	2 40	$3 00	----
1 3/4	1 45	1 45	2 45	3 10	$4 55
2	1 50	1 50	2 50	3 20	4 70
2 1/4	1 55	1 55	2 58	3 30	4 85
2 1/2	1 60	1 60	2 65	3 40	5 00
2 3/4	1 65	1 65	2 73	3 50	5 15
3	1 70	1 70	2 80	3 60	5 30
3 1/4	1 75	1 75	2 88	3 70	5 45
3 1/2	1 80	1 80	2 95	3 80	5 60
4	1 90	1 90	3 03	4 00	5 90
5	----	----	----	4 40	6 50
6	----	----	----	4 80	7 10
7	----	----	----	5 20	7 70
8	----	----	----	5 60	8 30

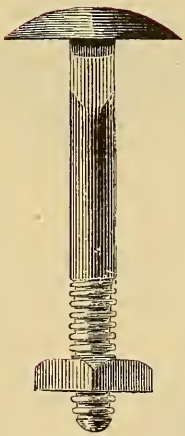
GENUINE NORWAY IRON BOLTS.



Carriage Bolt.

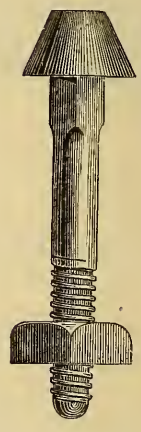


Tire Bolt.

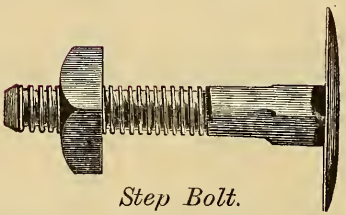


Elliptic Head.

Cone Head.



Steeple Head.



Step Bolt.

Elliptic, Cone and Steeple Head Bolts, and Step Bolt, same list as Norway Iron Carriage Bolts.

GENUINE NORWAY IRON BOLTS.

Carriage Bolts.

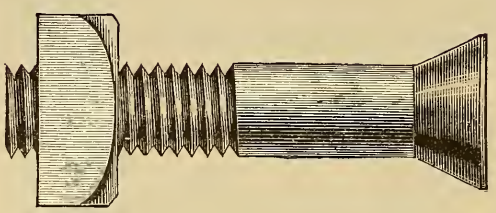
PRICE PER 100 BOLTS.

Length.	1/8 in.	3/16 in.	1/4 in.	5/16 in.	3/8 in.	7/16 in.	1/2 in.
1 in.	$2 50	$2 50	$2 50	$3 20	$4 55	----	-----
1 1/4	2 65	2 65	2 65	3 20	4 55	----	-----
1 1/2	2 80	2 80	2 80	3 20	4 55	$5 60	$7 64
1 3/4	2 95	2 95	2 95	3 35	4 55	5 60	7 64
2	3 10	3 10	3 10	3 50	4 55	5 60	7 64
2 1/4	3 24	3 24	3 24	3. 64	4 74	5 77	7 85
2 1/2	3 36	3 36	3 36	3 78	4 90	5 95	8 06
2 3/4	3 50	3 50	3 50	3 92	5 08	6 12	8 27
3	3 65	3 65	3 65	4 06	5 25	6 30	8 48
3 1/4	----	3 78	3 78	4 20	5 43	6 48	8 69
3 1/2	----	3 92	3 92	4 34	5 60	6 65	8 90
3 3/4	----	----	4 06	4 48	5 78	6 83	9 11
4	----	----	4 20	4 62	5 98	7 00	9 34
4 1/4	----	----	4 34	4 76	6 14	7 18	9 55
4 1/2	----	----	4 48	4 90	6 30	7 35	9 76
4 3/4	----	----	4 62	5 04	6 46	7 52	9 97
5	----	----	4 75	5 20	6 68	7 70	10 18
5 1/2	----	----	5 02	5 48	7 00	8 05	10 60
6	----	----	5 30	5 75	7 35	8 40	11 02
6 1/2	----	----	----	6 02	7 80	8 75	11 44
7	----	----	----	6 30	8 05	9 12	11 88
7 1/2	----	----	----	6 58	8 40	9 45	12 30
8	----	----	----	6 86	8 75	9 80	12 72

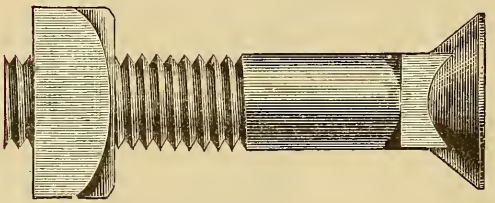
Tire Bolts.

Length.	1/8 in.	3/16 in.	1/4 in.	5/16 in.
1 in.	$1 50	$1 50	$1 68	$2 24
1 1/4	1 50	1 50	1 68	2 24
1 1/2	1 50	1 50	1 68	2 24
1 3/4	1 50	1 50	1 68	2 32
2	1 50	1 50	1 68	2 41
2 1/4	1 50	1 50	1 68	2 50
2 1/2	1 50	1 50	1 68	2 58
2 3/4	----	1 50	1 75	2 66
3	----	1 50	1 82	2 74
3 1/4	----	----	1 89	2 82
3 1/2	----	----	1 96	2 90
3 3/4	----	----	2 03	2 98
4	----	----	2 10	3 06

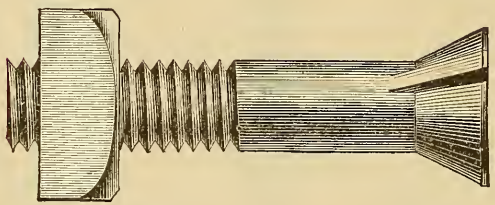
PLOW BOLTS.



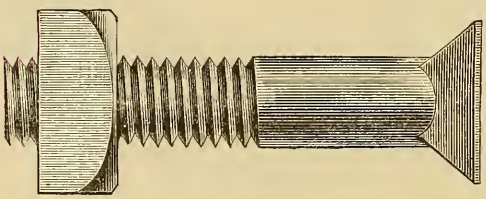
Round Countersunk Head.



Square Neck, Round Countersunk Head.



Round Countersunk Key Head.



Square Countersunk Head.

RUSSELL, BURDSALL & WARD'S

PLOW BOLTS.

Round Countersunk Short Square,
Plain Round Countersunk,
Plain Square Countersunk,
Round Countersunk Key Head,

FOR STEEL PLOWS.

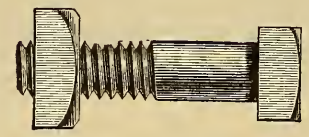
PRICE PER 100 BOLTS.

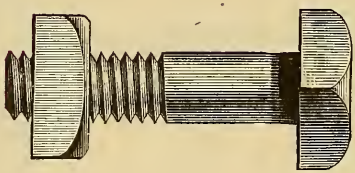
Length.	5/16 in.	3/8 in.	7/16 in.	1/2 in.	9/16 in.	5/8 in.
1¼ in.	$1 70	$2 00	$2 60	$3 50	$4 50	$5 70
1½	1 80	2 10	2 75	3 70	4 75	6 00
1¾	1 90	2 20	2 90	3 90	5 00	6 30
2	2 00	2 30	3 05	4 10	5 25	6 60
2¼	2 10	2 40	3 20	4 30	5 50	6 90
2½	2 20	2 50	3 35	4 50	5 75	7 20
2¾	2 30	2 60	3 50	4 70	6 00	7 50
3	2 40	2 70	3 65	4 90	6 25	7 80
3¼	-----	2 80	3 80	5 10	6 50	8 10
3½	-----	2 90	3 95	5 30	6 75	8 40
3¾	-----	3 00	4 10	5 50	7 00	8 70
4	-----	3 10	4 25	5 70	7 25	9 00

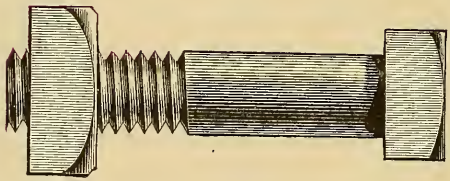
PRICE IN BULK.

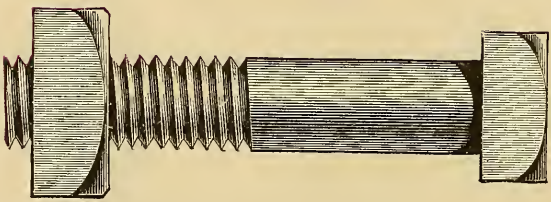
5/8	in. Plow Bolts, all lengths	----------	cents per	pound.
9/16	" "	----------	"	"
1/2	" "	----------	"	"
7/16	" "	----------	"	"
3/8	" "	----------	"	"
5/16	" "	----------	"	"

MACHINE BOLTS.









MACHINE BOLTS.

WITH SQUARE HEADS AND NUTS. FINISHED POINTS.

STANDARD LIST.

PRICE PER 100 BOLTS.

Length.	Diameter.									
	¼ in.	5/16 in.	⅜ in.	7/16 in.	½ in.	9/16 in.	⅝ in.	¾ in.	⅞ in.	1 in.
1½ in.	$2 70	$3 05	$3 50	$4 05	$4 80	$5 65	$6 55	$10 00	$14 15	$19 40
1¾ "	2 75	3 13	3 60	4 18	4 95	5 83	6 78	10 30	14 58	19 95
2 "	2 80	3 20	3 70	4 30	5 10	6 00	7 00	10 60	15 00	20 50
2¼ "	2 85	3 28	3 80	4 42	5 25	6 18	7 22	10 90	15 42	21 05
2½ "	2 90	3 35	3 90	4 55	5 40	6 35	7 45	11 20	15 85	21 60
2¾ "	2 95	3 42	4 00	4 68	5 55	6 52	7 68	11 50	16 28	22 15
3 "	3 00	3 50	4 10	4 80	5 70	6 70	7 90	11 80	16 70	22 70
3¼ "	3 05	3 58	4 20	4 92	5 85	6 88	8 12	12 10	17 12	23 25
3½ "	3 10	3 65	4 30	5 05	6 00	7 05	8 35	12 40	17 55	23 80
3¾ "	3 15	3 62	4 40	5 18	6 15	7 22	8 58	12 70	17 98	24 35
4 "	3 20	3 80	4 50	5 30	6 30	7 40	8 80	13 00	18 40	24 90
4¼ "	3 25	3 88	4 60	5 42	6 45	7 58	9 02	13 30	18 82	25 45
4½ "	3 30	3 95	4 70	5 55	6 60	7 75	9 25	13 60	19 25	26 00
4¾ "	3 35	4 02	4 80	5 68	6 75	7 92	9 48	13 90	19 68	26 55
5 "	3 40	4 10	4 90	5 80	6 90	8 10	9 70	14 20	20 10	27 10
5¼ "	3 45	4 18	5 00	5 92	7 05	8 28	9 92	14 50	20 52	27 65
5½ "	3 50	4 25	5 10	6 05	7 20	8 45	10 15	14 80	20 95	28 20
5¾ "	3 55	4 32	5 20	6 18	7 35	8 62	10 38	15 10	21 38	28 75
6 "	3 60	4 40	5 30	6 30	7 50	8 80	10 60	15 40	21 80	29 30
6½ "	3 70	4 55	5 50	6 55	7 80	9 15	11 05	16 00	22 65	30 40
7 "	3 80	4 70	5 70	6 80	8 10	9 50	11 50	16 60	23 50	31 50
7½ "	3 90	4 85	5 90	7 05	8 40	9 85	11 95	17 20	24 35	32 60
8 "	4 00	5 00	6 10	7 30	8 70	10 20	12 40	17 80	25 20	33 70

PRICE PER POUND.

Length	⅜	7/16	½	9/16	⅝	¾	⅞	1	in.
8¼ to 10 inches	18	16	14	13	12	11	10½	10½	cents.
10¼ " 12 "	17	15	13½	12½	11½	10¾	10¼	10¼	"
Over 12 "	16	14	13	12	11	10½	10	10	"

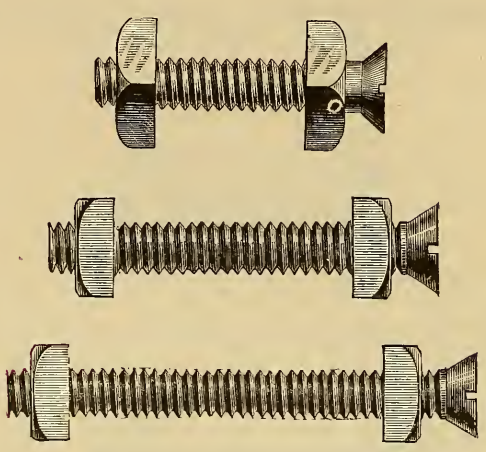
Bolts with Hexagon Heads or Hexagon Nuts ..... 10 per cent. extra.

If both " " and " " ..... 20 " "

Bolts with Button Heads at Machine Bolt List.

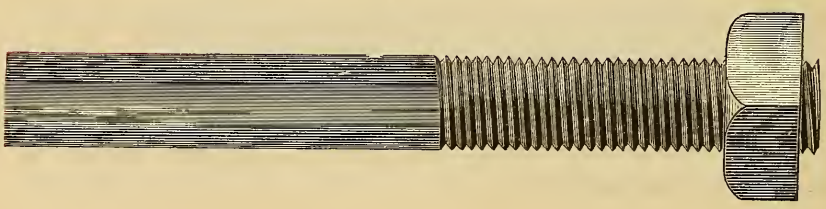
Bolts of irregular shape or style, made to order, will be charged extra, at the discretion of the manufacturer.

SINK BOLTS.



COUPLING BOLT.

BOLT END.



SINK BOLTS,

With two Nuts.

PRICE PER 100 BOLTS.

Length	1	1¼	1½	1¾	2	2¼ in.
¼ in	$1 30	1 35	1 40	1 45	1 50	1 55
Length	2½	2¾	3	3¼	3½	4 in.
¼ in	$1 60	1 65	1 70	1 75	1 80	1 90

COUPLING BOLTS.

Hexagon Heads and Nuts.

⅝	in. Diameter,	2½	in. long	22	cents per bolt.
⅝	"	3	"	25	" "
⅝	"	3½	"	28	" "
¾	"	3	"	30	" "
¾	"	3½	"	34	" "
¾	"	4	"	38	" "
1	"	3	"	58	" "
1	"	3½	"	63	" "
1	"	4	"	68	" "

Polished Heads and Case-hardened Nuts 20 per cent. extra.

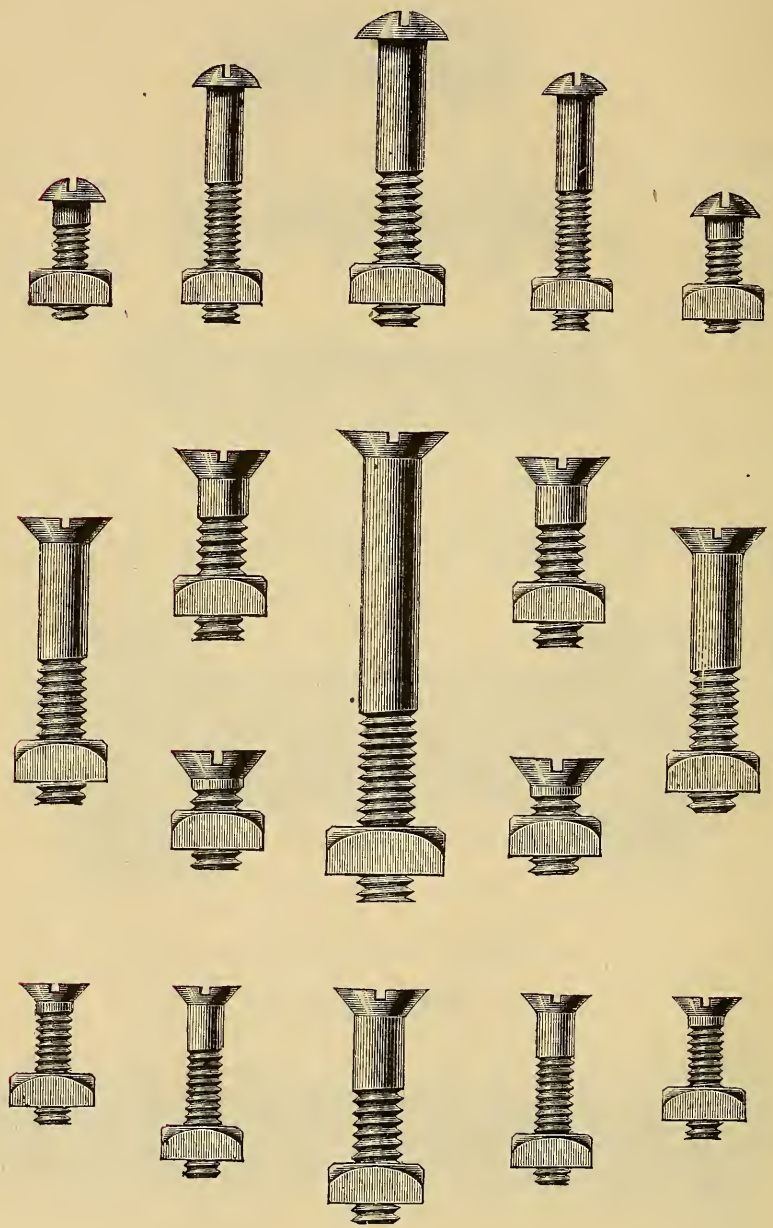
BOLT ENDS.

With Square Nuts.

Size of Iron	½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞	2
Length	8	9	10	11	12	13	14	15	16	17	18	19	20
Price per pound	14	12	11	11	11	11	11	14	14	17	17	20	20

Special lengths made to order; also larger and smaller sizes in diameter at an extra charge to list.

STOVE BOLTS.



RUSSELL, BURDSALL & WARD'S

STOVE BOLTS.

PRICE PER 100 BOLTS.

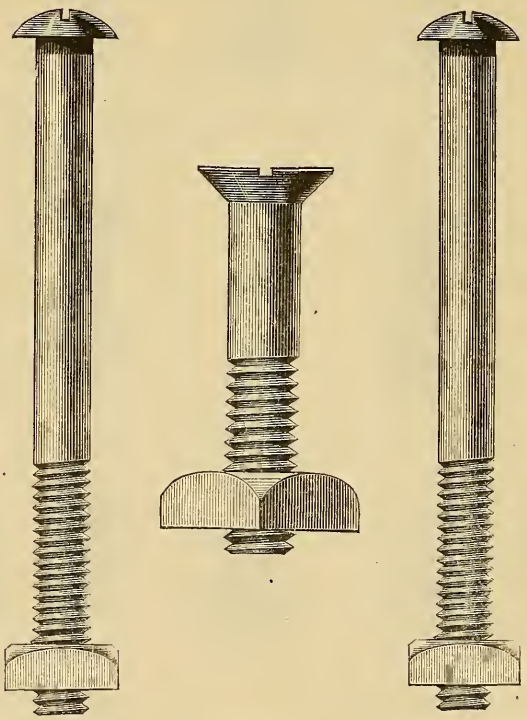
Length.	¼ in.	5/16 in.	⅜ in.
¾ in.	$0 65	$1 05	
1	70	1 10	$2 20
1¼	75	1 15	2 20
1½	80	1 20	2 20
1¾	85	1 25	2 20
2	90	1 30	2 30
2¼	95	1 35	2 40
2½	1 00	1 40	2 50
2¾	1 05	1 45	2 60
3	1 10	1 50	2 70
3¼	1 15	1 55	2 80
3½	1 20	1 60	2 90
3¾	1 25	1 65	3 00
4	1 30	1 70	3 10
5	1 50	1 90	3 50
6	1 70	2 10	3 90

STOVE, RANGE,

AND FURNACE RODS.

Oval or Countersunk,

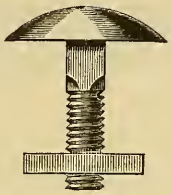
Turned Heads, and any length up to 60 in.



¼ in., 7 in. long and over	----------	cents per pound.	
5/16 " "	----------	" "	

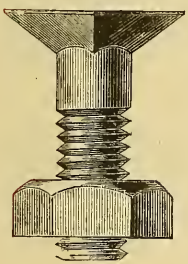
Under 7 in. same as Stove Bolts.

ELEVATOR BOLTS.



For Grain Elevator Buckets.

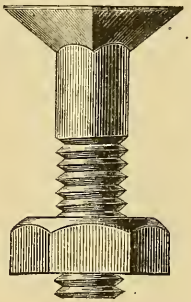
$\frac{3}{16}$ in. Malleable Iron.	$\frac{3}{16}$ and $\frac{1}{4}$ in. Wrought Iron.	$\frac{5}{16}$ in. Wrought Iron.
¾ in.....$1 50 per 100	¾ in.....$2 20 per 100	¾ in.....$3 00 per 100
1 ..... 1 50 "	1 ..... 2 20 "	1 ..... 3 00 "



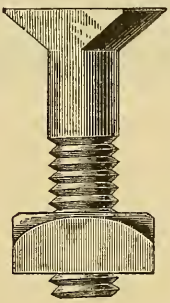
GUARD BOLTS.

For Mowing Machines.

Made with Square or Hexagon Nuts, as desired.



POINT BOLTS.



For Cultivators.

Made of ⅜ in. Iron, all lengths.

WOOD OR LAG SCREW.

Deep Thread Pattern.

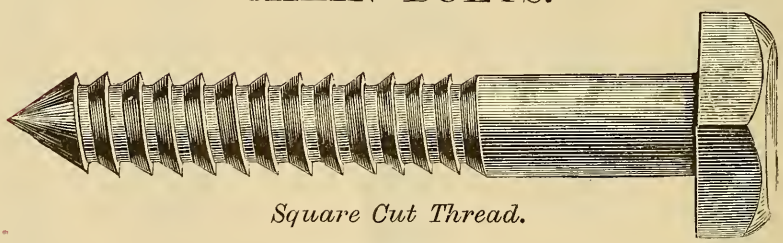
PRICE PER 100 BOLTS—STANDARD LIST.

Length.	Diameter.									
	¼ in.	5/16 in.	⅜ in.	7/16 in.	½ in.	9/16 in.	⅝ in.	¾ in.	⅞ in.	1 in.
1½ in.	$2 30	$2 70	$3 10	$3 50	$4 10	$4 80	----	----	----	----
2 "	2 40	2 80	3 25	3 70	4 35	5 10	$6 00	----	----	----
2½ "	2 50	2 90	3 40	3 90	4 60	5 40	6 40	$9 50	----	----
3 "	2 60	3 00	3 55	4 10	4 85	5 70	6 80	10 00	$14 25	----
3½ "	2 70	3 10	3 70	4 30	5 10	6 00	7 20	10 50	15 00	$20 30
4 "	2 80	3 20	3 85	4 50	5 35	6 30	7 60	11 00	15 75	21 25
4½ "	2 90	3 30	4 00	4 70	5 60	6 60	8 00	11 50	16 50	22 20
5 "	3 00	3 40	4 15	4 90	5 85	6 90	8 40	12 00	17 25	23 15
5½ "	3 10	3 50	4 30	5 10	6 10	7 20	8 80	12 50	18 00	24 10
6 "	3 20	3 60	4 45	5 30	6 35	7 50	9 20	13 00	18 75	25 05

PRICE PER POUND.

Diameter	⅜	7/16	½	9/16	⅝	¾	⅞	1 in.
Length	6¼	6¼	6¼	6¼	6¼	6¼	6¼	6¼ in. and longer.
Price	22	20	18	17	16	15	14	14 cents.

SKEIN BOLTS.

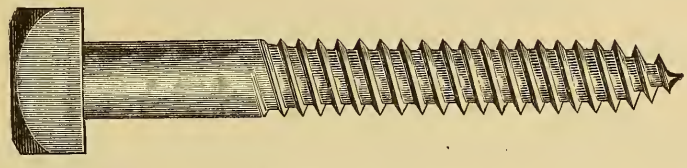


Square Cut Thread.

PRICE PER POUND.

⅜	in. diameter,	4	in. and longer	22 cents.
7/16	"	4½	"	20 "
½	"	5½	"	18 "
9/16	"	6	"	17 "
⅝	"	6	"	16 "
¾	"	6½	"	15 "
⅞	"	6½	"	14 "
1	"	6½	"	14 "

GIMLET-POINT COACH SCREWS.



PRICE PER 100.

LENGTH.	DIAMETER.					
	5/16	3/8	7/16	1/2	9/16	5/8
1½ in.	$2 00	$2 00	-----	-----	-----	-----
1¾	2 10	2 25	-----	-----	-----	-----
2	2 25	2 50	$2 75	$3 25	$4 00	$5 25
2½	2 50	2 75	3 00	3 50	4 25	5 50
3	2 75	3 00	3 25	3 75	4 50	5 75
3½	3 25	3 50	3 75	4 00	5 00	6 00
4	3 50	3 75	4 00	4 50	5 50	6 50
4½	-----	4 00	4 25	5 00	6 00	7 00
5	-----	4 25	4 50	5 50	6 50	7 50

Coach Screws, in Kegs of 150 pounds.

DIAMETER.	LENGTH.	PER POUND.
5/16 in.	3 in. and longer	34 cents.
3/8,	3 "	24 "
7/16	3 "	20 "
1/2	3 "	17 "
9/16	3 "	16 "
5/8	3 "	15 "
3/4 and larger	3 "	14 "

Shorter than 3 in., 2 cents per pound advance.

WM. H. HASKEL & CO'S LIST OF THREADS.

RIGHT-HAND THREADS.				LEFT-HAND THREADS.	
SIZE.	NO. THREADS.	SIZE.	NO. THREADS.	SIZE.	NO. THREADS.
3/16 in.	20	7/8 in.	9, 10	1/4 in.	18
1/4	18, 16, 20	1	8, 10	5/16	16
5/16	16, 18, 20	1⅛	8	3/8	14
3/8	14, 16	1¼	7	7/16	14
7/16	14, 16, 12	1⅜	7	1/2	12
1/2	12, 14, 10	1½	7	5/8	10
9/16	12	1⅝	5½	3/4	10
5/8	10, 11, 12	1¾	5	7/8	9
3/4	10, 9, 12	2	4½	1	8

The first column of the number of threads to the inch are Standard Threads.

NUMBER OF THREADS TO AN INCH,

IN V-THREAD SCREWS — ANGLE 60°,

AS DETERMINED AND RECOMMENDED BY COMMITTEE OF FRANKLIN INSTITUTE OF PHILADELPHIA, 1864.

Diam. of Bolt Inches	Threads per Inch	Diam. of Bolt Inches	Threads per Inch	Diam. of Bolt Inches	Threads per Inch	Diam. of Bolt Inches	Threads per Inch	Diam. of Bolt Inches	Threads per Inch
1/4	20	3/4	10	1 5/8	5 1/2	3	3 1/2	4 3/4	2 5/8
5/16	18	7/8	9	1 3/4	5	3 1/4	3 1/2	5	2 1/2
3/8	16	1	8	1 7/8	5	3 1/2	3 1/4	5 1/4	2 1/2
7/16	14	1 1/8	7	2	4 1/2	3 3/4	3	5 1/2	2 3/8
1/2	13	1 1/4	7	2 1/4	4 1/2	4	3	5 3/4	2 3/8
9/16	12	1 3/8	6	2 1/2	4	4 1/4	2 7/8	6	2 1/4
5/8	11	1 1/2	6	2 3/4	4	4 1/2	2 3/4		

WEIGHT OF LEAD PIPE PER FOOT.

Water Pipe.

Inside Diam. Inches	Thick-ness.	Weight.	Inside Diam. Inches.	Thick-ness.	Weight.	Inside Diam. Inches.	Thick-ness.	Weight.
3/8	.06	.0424	3/4	.16	2.25	1 3/4	.13	4.
3/8	.08	.625	3/4	.20	3.	1 3/4	.17	5.
3/8	.12	1.	3/4	.23	3.5	1 3/4	.21	6.5
3/8	.16	1.25	1	.10	1.5	1 3/4	.27	8.5
3/8	.19	1.5	1	.11	2.	2	.15	4.75
1/2	.07	.0545	1	.14	2.5	2	.18	6.
1/2	.09	.75	1	.17	3.25	2	.22	7.
1/2	.11	1.	1	.21	4.	2	.27	9.
1/2	.13	1.25	1	.24	4.75	2 1/2	1/16	8.
1/2	.16	1.75	1 1/4	.10	2.	2 1/2	1/4	11.
1/2	.19	2	1 1/4	.12	2.5	2 1/2	5/16	14.
5/8	.08	.0727	1 1/4	.14	3.	2 1/2	3/8	17.
5/8	.09	1.	1 1/4	.16	3.75	3	1/16	9.
5/8	.13	1.5	1 1/4	.19	4.75	3	1/4	12.
5/8	.16	2.	1 1/4	.25	6.	3	5/16	16.
5/8	.20	2.5	1 1/2	.14	3.5	3	3/8	20.
5/8	.22	2.75	1 1/2	.17	4.25	3 1/2	1/16	12.5
3/4	.08	.0969	1 1/2	.19	5.	3 1/2	1/4	15.
3/4	.10	1.25	1 1/2	.23	6.5	3 1/2	5/16	18.5
3/4	.12	1.75	1 1/2	.27	8.	3 1/2	3/8	22.

Waste Pipe.

Inside Diam. Inches.	Weight. Pounds.	Inside Diam. Inches.	Weight. Pounds.	Inside Diam. Inches.	Weight. Pounds.
1 1/2	2.	4	5.	4 1/2	8.
2	3.	4	6.	5	8.
3	3.5	4	8.	5	10.
3	5.	4 1/2	6.	5	12.

IRON BOLTS.

WITH SQUARE HEADS AND NUTS.

WEIGHT OF 100 BOLTS OF THE ENUMERATED SIZES.

Length.	¼ in.	5/16 in.	⅜ in.	7/16 in.	½ in.	⅝ in.	¾ in.	⅞ in.
1½ in.	4.16	7.59	10.62	15.94	23.87	39.31	------	------
1¾	4.22	7.87	11.72	16.90	25.06	41.38	------	------
2	4.75	8.56	12.38	18.25	26.44	45.69	73.62	------
2¼	5.34	9.12	12.90	19.38	28.62	49.50	76.	------
2½	5.97	9.59	14.69	20.69	29.50	51.25	79.75	------
2¾	6.50	10.44	16.47	21.50	31.16	53.	83.	------
3	----	10.78	17.87	22.38	32.44	56.	85.38	127.25
3½	----	11.81	18.94	26.19	39.75	63.12	93.44	140.56
4	----	----	20.59	28.87	42.50	74.87	108.12	148.37
4½	----	----	----	21.69	29.87	44.87	79.62	113.12	158.76
5	----	----	----	23.62	32.31	48.81	83.	122.	167.25
5½	----	----	----	25.81	34.44	51.38	87.88	128.62	174.88
6	----	----	----	26.87	36.62	53.31	92.38	131.75	204.25
6½	----	----	----	----	----	56.87	96.88	139.56	214.69
7	----	----	----	----	----	59.12	99.87	145.50	228.44
7½	----	----	----	----	----	61.87	105.75	150.88	235.31
8	----	----	----	----	----	64.44	109.50	157.12	239.88
9	----	----	----	----	----	70.50	118.12	169.62	258.12
10	----	----	----	----	----	77.	128.13	184.	276.18
11	----	----	----	----	----	82.88	136.19	195.13	295.69
12	----	----	----	----	----	86.37	144.87	209.75	311.94
13	----	----	----	----	----	92.	155.50	219.37	335.81
14	----	----	----	----	----	97.75	163.58	237.50	351.88
15	----	----	----	----	----	103.25	170.75	249.06	391.75

TACKS.

NUMBER PER POUND.

Size.	Length.	Number in Pounds.	Size.	Length.	Number in Pounds.
1 oz.	⅛ in.	16,000	10 oz.	11/16 in.	1,600
1½	3/16	10,666	12	¾	1,333
2	¼	8,000	14	13/16	1,143
2½	5/16	6,400	16	⅞	1,000
3	⅜	5,333	18	15/16	888
4	7/16	4,000	20	1	800
6	9/16	2,666	22	1 1/16	727
8	⅝	2,000			

GIMLET-POINT WOOD SCREWS.

ORDINARY SIZES.

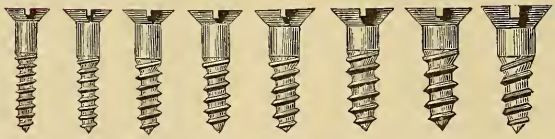
Quarter Inch. *Three-eighths Inch.*

0 1 2 2 3 4 5 6 7

Half Inch.

2 3 4 5 6 7 8 9

Five-eighths Inch.

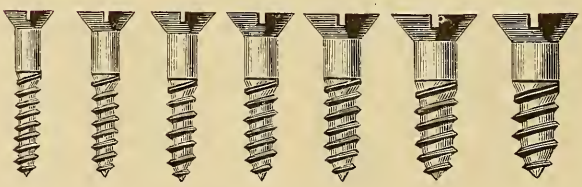


3 4 5 6 7 8 9 10

Three-fourths Inch.

4 5 6 7 8 9 10 11 12

Seven-eighths Inch.

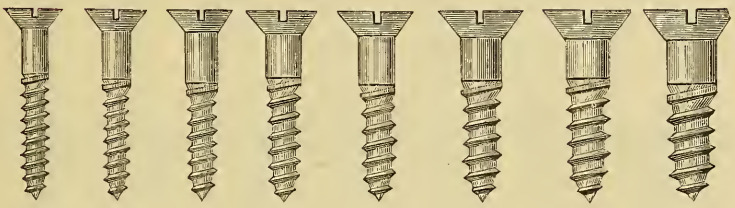


6 7 8 9 10 11 12

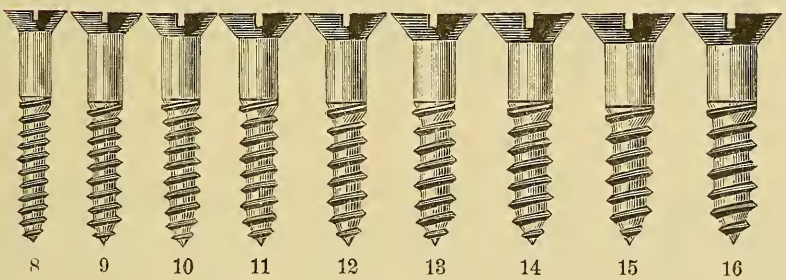
GIMLET-POINT WOOD SCREWS.

ORDINARY SIZES.

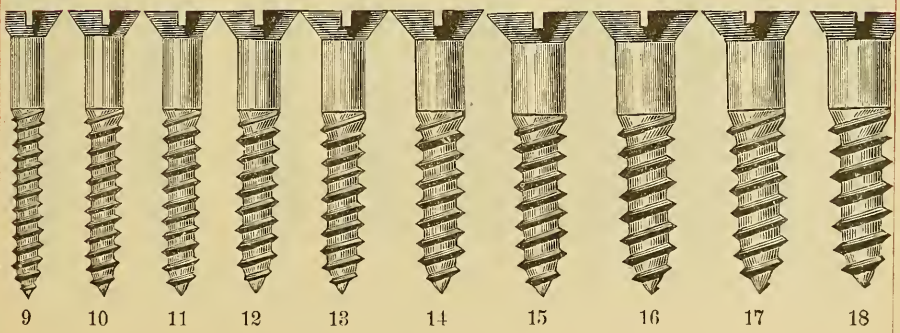
One Inch.



One and One-quarter Inch.



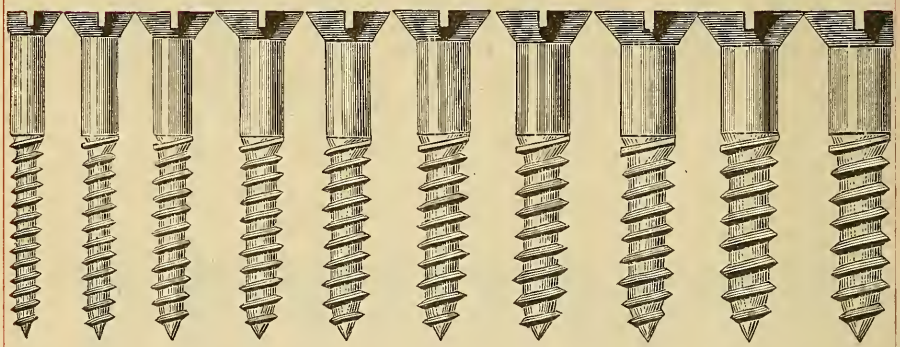
One and One-half Inch.



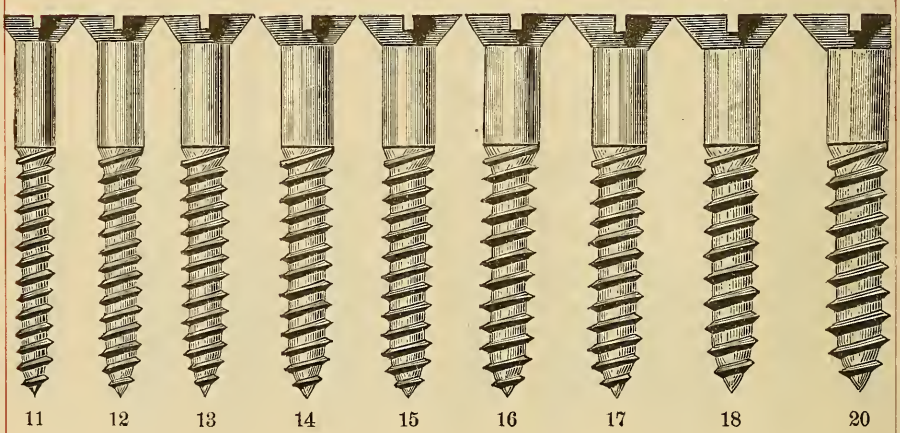
GIMLET-POINT WOOD SCREWS.

ORDINARY SIZES.

One and Three-fourths Inch.



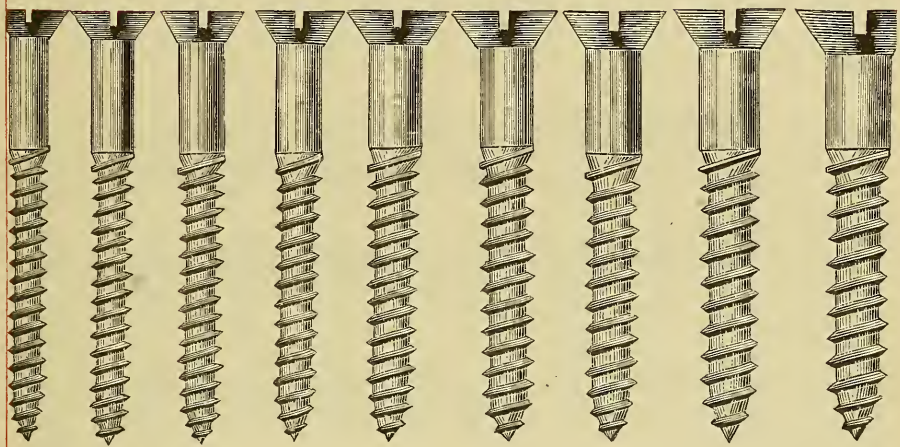
Two Inch.



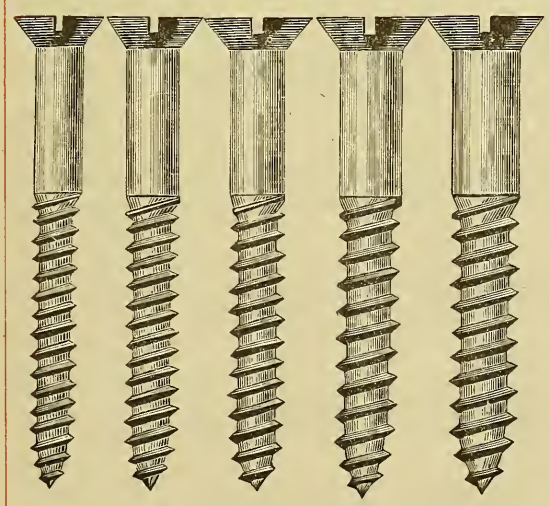
GIMLET-POINT WOOD SCREWS.

ORDINARY SIZES.

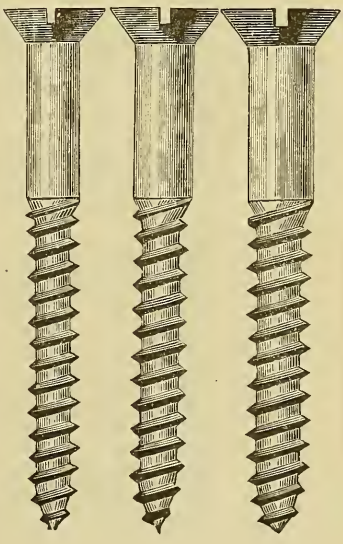
Two and One-quarter Inch.



Two and One-half Inch.



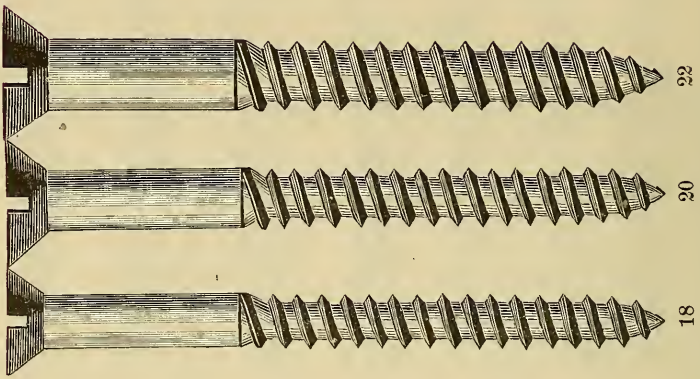
Two and Three-fourths Inch.



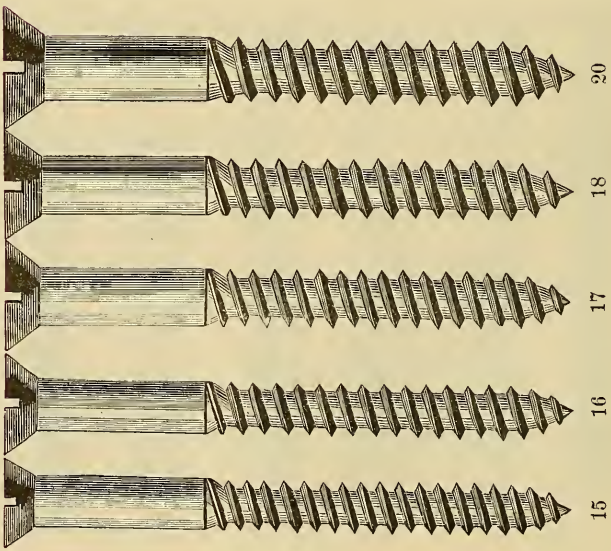
GIMLET-POINT WOOD SCREWS.

ORDINARY SIZES.

Three and One-half Inch.



Three Inch.



GIMLET POINT SCREWS.

PRICE LIST.

¼ in.		½ in.		⅝ in.		¾ in.		⅞ in.	
No. 0.	$0 19	No. 2.	$0 19	No. 2.	$0 20	No. 4.	$0 22	No. 5.	$0 26
1.	19	3.	19	3.	20	5.	24	6.	27
2.	19	4.	19	4.	21	6.	26	7.	29
⅜ in.		5.	20	5.	22	7.	28	8.	31
No. 1.	$0 19	6.	21	6.	24	8.	30	9.	33
2.	19	7.	24	7.	26	9.	32	10.	35
3.	19	8.	26	8.	29	10.	34	11.	38
4.	19	9.	29	9.	31	11.	36	12.	41
5.	20	10.	31	10.	33	12.	38	13.	46
6.	21			11.	35	13.	44	14.	50
7.	24			12.	37	14.	48	15.	58
8.	26					15.	56	16.	65
						16.	64		

1 in.		1¼ in.		1½ in.		1¾ in.		2 in.	
No. 5.	$0 29	No. 7.	$0 37	No. 8.	$0 43	No. 9.	$0 52	No. 10.	$0 57
6.	30	8.	38	9.	45	10.	54	11.	62
7.	32	9.	40	10.	47	11.	57	12.	71
8.	33	10.	43	11.	51	12.	63	13.	79
9.	35	11.	46	12.	55	13.	70	14.	88
10.	37	12.	50	13.	61	14.	79	15.	97
11.	40	13.	55	14.	70	15.	88	16.	1 06
12.	43	14.	61	15.	79	16.	97	17.	1 17
13.	48	15.	70	16.	88	17.	1 06	18.	1 26
14.	53	16.	80	17.	97	18.	1 17	20.	1 46
15.	60	17.	86	18.	1 05	20.	1 34	22.	1 69
16.	68	18.	94	20.	1 26	22.	1 55	24.	2 25
17.	75	20.	1 17			24.	1 85		
18.	84								
20.	1 16								

2¼ in.		2½ in.		2¾ in.		3 in.		3½ in.	
No. 11.	$0 71	No. 12.	$0 89	No. 13.	$1 06	No. 14.	$1 26	No. 16.	$1 88
12.	80	13.	97	14.	1 17	15.	1 37	17.	2 09
13.	89	14.	1 06	15.	1 26	16.	1 55	18.	2 34
14.	97	15.	1 18	16.	1 37	17.	1 73	20.	2 87
15.	1 06	16.	1 26	17.	1 55	18.	1 92	22.	3 33
16.	1 18	17.	1 37	18.	1 67	20.	2 28	24.	3 69
17.	1 26	18.	1 46	20.	2 00	22.	2 80		
18.	1 37	20.	1 69	22.	2 46	24.	3 40		
20.	1 57	22.	2 10	24.	2 95				
22.	1 92	24.	2 60						
24.	2 50								

Sizes	4	4	4	4	inch.
Nos.	18	20	22	24	
Price	$2 76	3 46	3 90	4 30	

IRON SET SCREWS.

SQUARE HEADS.

PRICE PER 100 SCREWS.

Cup Point.

No. Threads to inch.	20	18	16	14	12	12	11	10	9	8
Diameter Screw.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1
Length under Head.										
¾ in.	3 00	3 30	3 75	4 35	5 10	----	----	----	----	----
1	3 20	3 55	4 00	4 65	5 40	6 40	----	----	----	----
1¼	3 40	3 80	4 25	4 95	5 70	6 75	7 90	----	----	----
1½	3 60	4 05	4 50	5 25	6 00	7 10	8 25	11 25	----	----
1¾	3 80	4 30	4 75	5 55	6 30	7 45	8 60	12 00	14 00	----
2	4 00	4 55	5 00	5 85	6 60	7 80	8 95	12 75	14 90	18 00
2¼	----	4 80	5 25	6 15	6 90	8 15	9 30	13 50	15 80	19 00
2½	----	----	5 50	6 45	7 20	8 50	9 65	14 25	16 70	20 00
2¾	----	----	----	6 75	7 50	8 85	10 00	15 00	17 60	21 00
3	----	----	----	----	7 80	9 20	10 35	15 75	18 50	22 00

Oval Point.

Add 15 per cent. for case-hardening.

In ordering Set Screws, state whether you wish them with *Oval* or *Cup Points*, and if *case-hardened* or not.

STEEL SET SCREWS.

SQUARE HEADS.

PRICE PER 100 SCREWS.

Steel Set Screw.

No. Threads to inch.	20	18	16	14	12	12	11	10	9	8
Diameter Screw.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1
Length under Head.										
¾ in.	6 00	6 60	7 50	8 70	10 20	----	----	----	----	----
1	6 40	7 10	8 00	9 30	10 80	12 80	----	----	----	----
1¼	6 80	7 60	8 50	9 90	11 40	13 50	15 80	----	----	----
1½	7 20	8 10	9 00	10 50	12 00	14 20	16 50	22 50	----	----
1¾	7 60	8 60	9 50	11 10	12 60	14 90	17 20	24 00	28 00	----
2	8 00	9 10	10 00	11 70	13 20	15 60	17 90	25 50	29 80	36 00
2¼	----	9 60	10 50	12 30	13 80	16 30	18 60	27 00	31 60	38 00
2½	----	----	11 00	12 90	14 40	17 00	19 30	28 50	33 40	40 00
2¾	----	----	----	13 50	15 00	17 70	20 00	30 00	35 20	42 00
3	----	----	----	----	15 60	18 40	20 70	31 50	37 00	44 00

Lathe Dog Screws same list as Steel Set Screws.

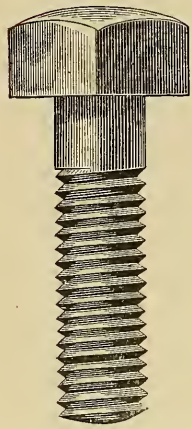
Lathe Dog Screw.

EXTRA LARGE HEAD BOLTS.

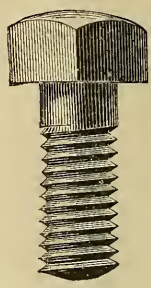
Price of same will be 15 per cent. above regular sizes made from same iron.

SQUARE HEAD CAP SCREWS.

PRICE PER 100 SCREWS.



Diam. H'd.	⅜	7–16	½	9–16	⅝	11–16	¾	⅞	1	1⅛
Length H'd.	¼	5–16	⅜	7–16	½	9–16	⅝	¾	⅞	1
No. Threads to inch.	20	18	16	14	12	12	11	10	9	8
Dia. Screw.	¼	5–16	⅜	7–16	½	9–16	⅝	¾	⅞	1
Length under Head.										
¾ in.	3 30	3 75	4 35	5 10	6 00	-----	-----	-----	-----	-----
1	3 55	4 00	4 65	5 40	6 40	7 50	-----	-----	-----	-----
1¼	3 80	4 25	4 95	5 70	6 80	7 90	10 50	-----	-----	-----
1½	4 05	4 50	5 25	6 00	7 20	8 30	11 25	14 25	-----	-----
1¾	4 30	4 75	5 55	6 30	7 60	8 70	12 00	15 00	18 00	-----
2	4 55	5 00	5 85	6 60	8 00	9 10	12 75	15 75	18 90	22 00
2¼	----	5 25	6 15	6 90	8 40	9 50	13 50	16 50	19 80	23 00
2½	----	----	6 45	7 20	8 80	9 90	14 25	17 25	20 70	24 00
2¾	----	----	----	7 50	9 20	10 30	15 00	18 00	21 60	25 00
3	----	----	----	----	9 60	10 70	15 75	18 75	22 50	26 00



Add 15 per cent. to list for superior finish.

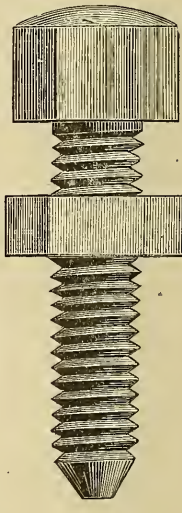
These Screws are perfectly uniform in size and pitch of thread, and made to U. S. Standard Gauges.

Add for all Screws over 3 in. in length same rate of difference per ¼ in. in length as preceding figures in same column. Regular size Iron for Square Head Cap is ⅛ in. larger than Bolt in diameter.

HEXAGON HEAD CAP SCREWS.

PRICE PER 100 SCREWS.

Diam. H'd.	7–16	½	9–16	⅝	¾	13–16	⅞	1	1⅛	1¼
Length H'd.	¼	5–16	⅜	7–16	½	9–16	⅝	¾	⅞	1
No. Threads to inch.	20	18	16	14	12	12	11	10	9	8
Diam. Screw.	¼	5–16	⅜	7–16	½	9–16	⅝	¾	⅞	1
Length under Head.										
¾ in.	4 00	4 85	5 60	6 60	7 95	-----	-----	-----	-----	-----
1	4 49	5 25	6 00	7 05	8 45	10 50	-----	-----	-----	-----
1¼	4 80	5 65	6 40	7 50	8 90	11 25	14 25	-----	-----	-----
1½	5 20	6 05	6 80	7 95	9 35	12 00	15 00	18 00	-----	-----
1¾	5 60	6 45	7 20	8 40	9 80	12 75	15 75	18 75	21 75	-----
2	6 00	6 85	7 60	8 85	10 25	13 50	16 50	19 50	22 65	25 50
2¼	----	7 25	8 00	9 30	10 70	14 25	17 25	20 25	23 55	26 50
2½	----	----	8 40	9 75	11 15	15 00	18 00	21 00	24 45	27 50
2¾	----	----	----	10 20	11 60	15 75	18 75	21 75	25 35	28 50
3	----	----	----	-----	12 05	16 50	19 50	22 50	26 25	29 50



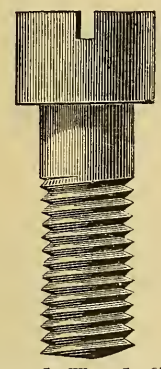
Add 15 per cent. to list for finishing.

Cap Screw, Hexagon Head.

Hanger Screw.

If length of head and thread on list are not as desired, specify when ordering length of head and number of threads desired in your order. All Screws of this make are milled from a solid bar, it being the only practical way of making them, and a gain of 75 per cent. in strength is obtained by so doing over forged bolts. Regular size Iron for Hexagon Head Cap Bolt, from ½ in. up, is ¼ in. larger than diameter of body of bolt. Under ½ in., Iron is $\frac{3}{16}$ larger than body of bolt.

SET OR CAP SCREWS.



Round Head Cap.

Filister Head.

Biscuit Head.

Bevel Head.

PRICE PER 100 SCREWS.

Diameter Head	3/16	8/32	11/32	15/32	19/32	23/32	13/16	7/8	15/16	1
Length Head	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4
No. Threads to Inch	32	30	20	18	16	14	12	12	11	10
Diameter Screw	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4
LENGTH.										
3/4 in. under Head	3 00	3 40	3 75	4 50	5 25	6 00	7 50	-----	-----	-----
1 " "	3 40	3 75	4 15	4 90	5 65	6 40	7 95	9 90	-----	-----
1 1/4 " "	3 75	4 15	4 50	5 25	6 00	6 75	8 40	10 35	13 50	-----
1 1/2 " "	4 15	4 50	4 90	5 65	6 40	7 15	8 85	10 80	14 25	18 00
1 3/4 " "	-----	4 90	5 25	6 00	6 75	7 50	9 30	11 25	15 00	18 75
2 " "	----	----	5 65	6 40	7 15	7 90	9 75	11 70	15 75	19 50
2 1/4 " "	----	----	----	6 75	7 50	8 25	10 20	12 15	16 50	20 25
2 1/2 " "	----	----	----	----	7 90	8 65	10 65	12 60	17 25	21 00
2 3/4 " "	----	----	----	----	----	9 00	11 10	13 05	18 00	21 75
3 " "	----	----	----	----	----	----	11 55	13 50	18 75	22 50

Add 15 per cent. to list for Finishing.

In ordering Bevel Head Screws, give the entire length.

Malleable Iron.

Thumb Screws.

Malleable Iron, made any style or shape to suit, add 25 per cent. to above list.

Wrought Iron Milled Round Head, different shapes and styles, add 25 per cent. to above list.

Wrought Iron, Milled Round Head.

Shoulder Screws.

All kinds and styles made to order.

Add 20 per cent. to above list.

Left-hand Cap Screws and Studs furnished any size or style desired for special purposes.

Cap Screws Case-hardened at 15 per cent. above list. When clouded add for Finishing. Blueing 15 per cent. above price of Finished Screws.

MACHINE SCREWS.

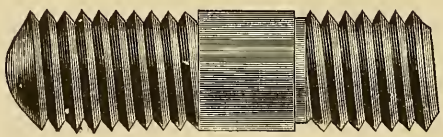
Round and Flat Head.

PRICE PER GROSS.

Threads per inch	32	30 & 32	24	24	20	16 & 18		16	16
Numbers	6	8	10	12	14	16	18	20	24
3/8	$1 00	$1 15	$1 25	$1 35	----	----	----	----	-----
1/2	1 00	1 15	1 25	1 35	$1 70	$2 05	----	----	-----
5/8	----	1 15	1 25	1 35	1 70	2 05	$2 40	$2 95	-----
3/4	----	1 15	1 25	1 45	1 80	2 15	2 60	3 15	$4 50
7/8	----	----	1 35	1 60	1 95	2 25	2 85	3 40	4 50
1	----	----	1 45	1 70	2 05	2 50	3 05	3 60	4 50
1 1/4	----	----	----	1 80	2 15	2 70	3 30	3 85	4 95
1 1/2	----	----	----	----	2 25	2 95	3 50	4 05	5 35

Machine Screw Taps, per dozen, $6 00 to $9 00.

STUDS.



For Cylinder Heads and Other Purposes.

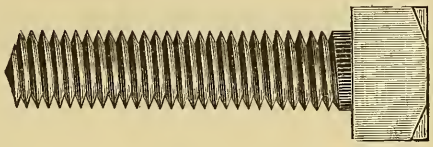
PRICE PER 100 STUDS.

Threads per inch	18	16	14	12	12	11	10
Diameter of Stud	5/16	3/8	7/16	1/2	9/16	5/8	3/4
2 in. long	$4 50	$5 00	$5 90	$6 80	$9 00	$11 00	$13 00
2 1/4 "	4 75	5 25	6 20	7 10	9 50	11 50	13 50
2 1/2 "	5 00	5 50	6 50	7 40	10 00	12 00	14 00
2 3/4 "	5 25	5 75	6 80	7 70	10 50	12 50	14 50
3 "	5 50	6 00	7 20	8 00	11 00	13 00	15 00
3 1/2 "	6 00	6 50	7 70	8 60	11 50	13 50	15 50
4 "	6 50	7 00	8 80	9 20	12 00	14 00	16 00
4 1/2 "	7 00	7 50	----	----	-----	14 50	16 50
5 "	7 50	8 00	----	----	----	15 00	17 00

We would respectfully call the attention of master mechanics and engine builders to a new and practical invention in Bolts — *Copper Electro-plated Bolts*, to prevent rusting. We can furnish railroad shops and engine works with this class of Bolts or Studs for steam-tight purposes, at less than one half the cost they can make them for.

Price from $1 00 to $3 00 per 100 above Finished Bolts.

TAP BOLTS.



PRICE PER 100 BOLTS.

Length.	1/4 in.	5/16 in.	3/8 in.	7/16 in.	1/2 in.	9/16 in.	5/8 in.	3/4 in.
1 1/2 in.	$2 50	$2 80	$3 15	$3 65	$4 30	$5 10	$5 90	$9 00
1 3/4 "	2 55	2 85	3 25	3 80	4 45	5 30	6 10	9 25
2 "	2 60	2 90	3 35	3 95	4 60	5 50	6 30	9 50
2 1/4 "	2 65	2 95	3 45	4 10	4 75	5 70	6 50	9 75
2 1/2 "	2 70	3 00	3 55	4 25	4 90	5 90	6 70	10 00
2 3/4 "	2 75	3 05	3 65	4 40	5 05	6 10	6 90	10 25
3 "	2 80	3 10	3 75	4 55	5 20	6 30	7 10	10 50

Tap Bolts with Hexagon Heads, 10 per cent. extra.

TURN BUCKLES.

PRICE EACH.

Size of Iron	3/8	1/2	5/8 in.
Price	$0 75	1 00	1 25

PRICE PER POUND.

3/4 in.	20 cents.
7/8 "	18 "
1 "	17 "
1 1/8 "	17 "
1 1/4 "	16 "
1 1/2 "	16 "

Larger Sizes made to Order.

AHLSTROM'S

PATENT EXPANSION BOLTS.

PRICE LIST.

SIZES.	LENGTHS, INCLUDING HEAD AND NUT.	PRICE PER 100.
1/4 in.	2 1/2 in. and less	$7 50
5/16	2 1/2 "	9 00
3/8	3 "	12 00
7/16	3 "	15 00
1/2	3 "	18 00
9/16	3 1/2 "	23 00
5/8	3 1/2 "	28 00
3/4	4 "	36 00

We desire to call the attention of Engineers, Architects, Bridge Builders, Masons, Machinists, Dock Builders, and all others whose business requires fastenings of great strength. With these Bolts all that is required is a hole of sufficient size and depth to insert the Bolt, with Nut and Jaw; then by turning the head as with a common bolt the Nut is drawn towards the head of the Bolt, thus opening the wedge-shaped Jaws, and causing them to bind in strongest manner possible, and the greater the tension or strain the firmer the Bolt will hold. This must certainly commend them in fastening any object to stone, iron or brick work above the process of "leading in." And another advantage: it can be removed as easily as it can be applied without injury to the article to which it is fastened.

CAST STEEL FILES.

LIST, $10.00 TO THE POUND STERLING.

Taper Saw File.

SINGLE CUT.

Length,	3½	4	4½	5	5½	6	7	8	9	10 in.
Price,	$2 00	2 25	2 50	2 75	3 25	3 75	4 75	6 00	7 75	9 75 per doz.

DOUBLE CUT.

Length,	3½	4	4½	5	5½	6	7	8	9	10 in.
Price,	$3 00	3 25	3 75	4 25	4 75	5 50	6 75	8 50	10 50	13 00 per doz.

Pit Saw File.

SECOND CUT, SINGLE.

Length,	3½	4	4½	5	5½	6	7	8	9	10 in.
Price,	$2 38	2 62	2 88	3 25	3 75	4 25	5 25	6 75	8 00	10 00 per doz.

Hook Tooth File.

SINGLE CUT.

Length,	6	7	8	9	10	11	12	in.
Price,	$4 88	6 00	6 75	8 50	10 00	12 00	13 50	per doz.

Round Bastard File.

Half Round Bastard File.

Horse Rasps, Half Round and Round Bastard Cut.

Flat and Half Round Wood Rasps.

Length,	4	4½	5	6	7	8	9	in.
Price,	$2 38	2 62	2 88	3 50	4 25	5 25	6 00	per doz.
Length,	10	11	12	13	14	15	16	in.
Price,	$7 50	9 00	10 75	12 50	15 00	18 00	21 50	per doz.

Hand Bastards and Half Round Shoe Rasps.

Length,	4	4½	5	6	7	8	9	in.
Price,	$2 62	2 88	3 12	4 25	5 25	6 00	7 50	per doz.
Length,	10	11	12	13	14	15	16	in.
Price,	$9 00	10 75	12 50	15 00	18 00	21 50	25 00	per doz.

CAST STEEL FILES.

Mill Saw File

Flat Bastard File.

ROUGH AND BASTARD CUT.

Mill Saw, Flat and Square.

Lengths,	4	4½	5	6	7	8	9	10	in.
Price,	$2 38	2 62	2 88	3 50	4 25	5 25	6 00	7 50	per doz.
Lengths,	11	12	13	14	15	16	18		in.
Price,	$9 00	10 75	12 50	15 00	18 00	21 50	30 00		per doz.

SECOND CUT FILES.

Mill Saw, Flat, Round, Square and Half Round.

Lengths,	4	4½	5	6	7	8	9	10	in.
Price,	$2 75	3 00	3 38	4 12	4 88	6 00	6 75	8 50	per doz.
Lengths,	11	12	13	14	15	16	18		in.
Price,	$10 00	12 00	13 50	16 50	19 50	23 50	32 50		per doz.

SMOOTH CUT FILES.

Flat, Round, Square, Half Round, Cabinet Rasps and Files.

Lengths,	4	4½	5	6	7	8	9	10	in.
Price,	$3 38	3 75	4 12	4 75	5 75	6 75	7 75	9 50	per doz.
Lengths,	11	12	13	14	15	16	18		in.
Price,	$11 50	13 25	15 00	18 00	21 00	26 00	39 00		per doz.

HAND SECOND CUT FILES.

Lengths,	4	4½	5	6	7	8	9	10	in.
Price,	$3 00	3 38	3 75	4 88	6 00	6 75	9 50	10 00	per doz.
Lengths,	11	12	13	14	15	16			in.
Price,	$12 00	13 50	16 50	19 50	23 50	27 50			per doz.

HAND SMOOTH CUT FILES.

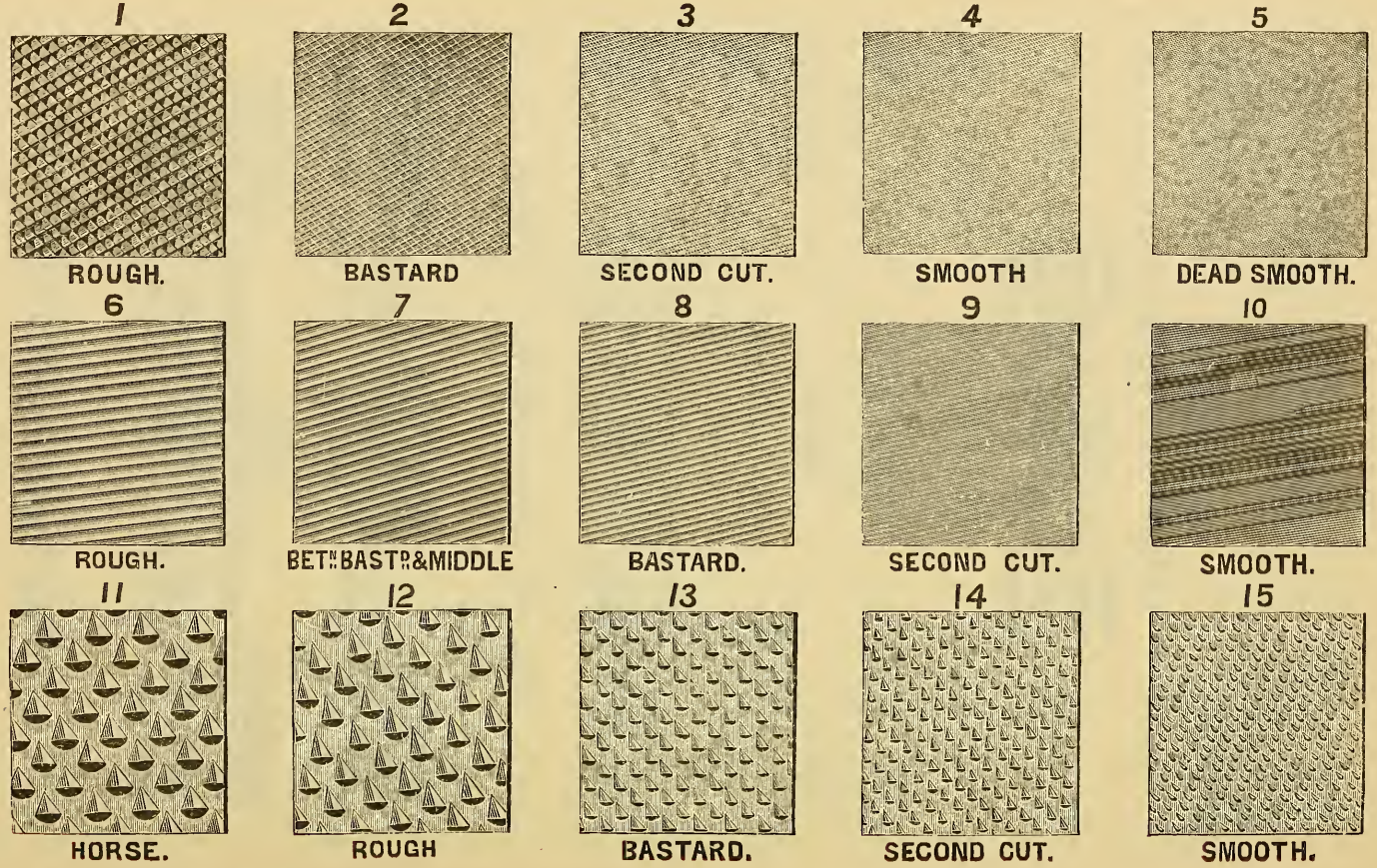
Lengths,	4	4½	5	6	7	8	9	10	in.
Price,	$3 75	4 12	4 50	5 75	6 75	7 75	9 50	11 50	per doz.
Lengths,	11	12	13	14	15	16	18		in.
Price,	$13 25	15 00	18 00	21 00	26 00	31 50	42 00		per doz.

DEAD SMOOTH FILES.

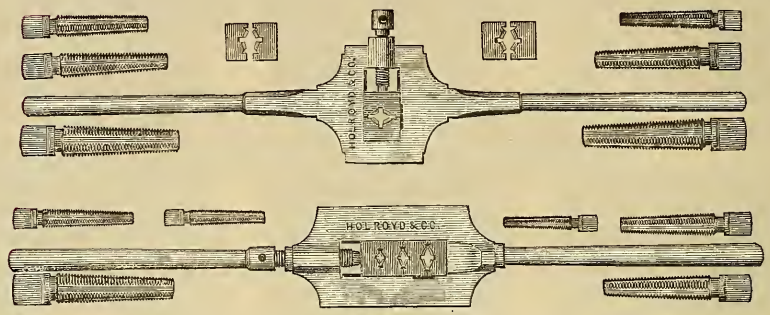
Flat, Square, Round and Half Round.

Lengths,	4	4½	5	6	7	8	9	10	in.
Price,	$5 12	5 62	6 25	7 25	8 75	10 00	11 75	14 25	per doz.
Lengths,	11	12	13	14	15	16			in.
Price,	$17 50	20 00	22 50	27 00	31 50	39 00			per doz.

SHOWING CUT OF FILES.



STOCKS AND DIES.



MANUFACTURERS' STANDARD LIST.

No. 1.

$60 00.

4 Sets of Dies and 8 Taps.

THREADS TO INCH.	RIGHT HAND.	LEFT HAND.
5	2 to 1¾ in.	2 to 1¾ in.
5	1¾ " 1½	1¾ " 1½
7	1½ " 1¼	1½ " 1¼
7	1¼ " 1	1¼ " 1

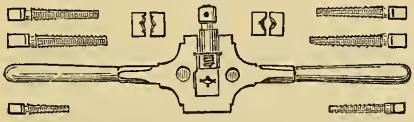
No. 2.

$60 00.

4 Sets of Dies and 8 Taps.

THREADS TO INCH.	RIGHT HAND.	RIGHT HAND.
5	2 to 1¾ in.	1¾ to 1⅝ in.
6	1⅝ " 1½	1½ " 1⅜
7	1⅜ " 1¼	1¼ " 1⅛
8	1⅛ " 1	1 " ¾

STOCKS AND DIES.

No. 3.  $45 00.

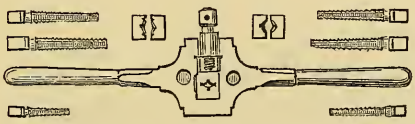
4 Sets of Dies and 8 Taps.

THREADS TO INCH.	RIGHT HAND.	LEFT HAND.
6	1¾ to 1½ in.	1¾ to 1½ in.
6	1½ " 1¼	1½ " 1¼
8	1¼ " 1	1¼ " 1
8	1 " ⅞	1 " ⅞

No. 4. $45 00.

4 Sets of Dies and 8 Taps.

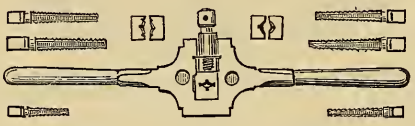
THREADS TO INCH.	RIGHT HAND.	RIGHT HAND.
6	1¾ to 1⅝ in.	1⅝ to 1½ in.
7	1½ " 1⅜	1⅜ " 1¼
8	1¼ " 1⅛	1⅛ " 1
9	1 " ⅞	⅞ " ¾

No. 5.  $35 00.

4 Sets of Dies and 8 Taps.

THREADS TO INCH.	RIGHT HAND.	LEFT HAND.
8	1½ to 1¼ in.	1½ to 1¼ in.
8	1¼ " 1	1¼ " 1
9	1 " ⅞	1 " ⅞
9	⅞ " ¾	⅞ " ¾

STOCKS AND DIES.

No. 5½.  $35 00.

4 Sets of Dies and 8 Taps.

THREADS TO INCH.	RIGHT HAND.	RIGHT HAND.
6	1½ to 1¼ in.	$1\frac{5}{16}$ to 1⅛ in.
7	1½ " 1¼	$1\frac{5}{16}$ " 1⅛
8	1¼ " 1	1 " ⅞
9	1 " ⅞	⅞ " ¾

No. 6. $20 00.

2 Sets of Dies and 4 Taps.

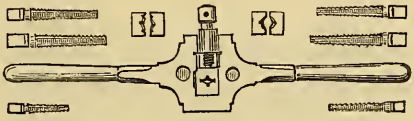
THREADS TO INCH.	RIGHT HAND.	LEFT HAND.
8	1½ to 1¼ in.	1½ to 1¼ in.
8	1¼ " 1	1¼ " 1

No. 7. $12 00.

3 Sets of Dies and 6 Taps.

THREADS TO INCH.	RIGHT HAND.	LEFT HAND.
8	1¼ to 1 in.	1¼ to 1 in.
8	1 " ⅞	1 " ⅞
10	⅞ " ¾	
10	¾ " ⅝	

STOCKS AND DIES.

No. 9.  $12 00.

3 Sets of Dies and 6 Taps.

Threads to Inch.	Right Hand.	Right Hand.
8	1¼ to 1 in.	1 to ⅞ in.
10	⅞ " ¾	¾ " ⅝
12	⅝ " 9/16	9/16 " ½

No. 11. $10 00.

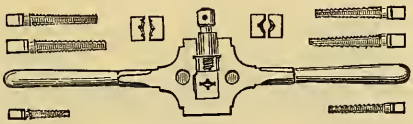
3 Sets of Dies and 4 Taps.

Threads to Inch.	Right Hand.	Left Hand.
8	1¼ to ⅞ in.	1¼ to ⅞ in.
10	⅞ " ¾	
10	¾ " ½	

No. 15. $10 00.

3 Sets of Dies and 5 Taps.

Threads to Inch.	Right Hand.	Right Hand.
8	1¼ to ⅞ in.	
10	⅞ " ¾	¾ to ⅝ in.
12	⅝ " ½	½ " ⅜

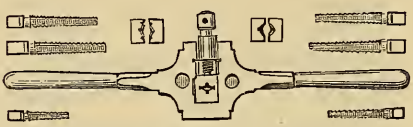
No. 17.  $9 00.

3 Sets of Dies and 6 Taps.

Threads to Inch.	Right Hand.	Left Hand.
9	1 to ⅞ in.	1 to ⅞ in.
9	⅞ " ¾	⅞ " ¾
12	¾ " ⅝	
12	⅝ " ½	

STOCKS AND DIES.

No. 19.



$9 00.

3 Sets of Dies and 6 Taps.

THREADS TO INCH.	RIGHT HAND.	RIGHT HAND.
9	1 to ⅞ in.	⅞ to ¾ in.
12	¾ " ⅝	⅝ " ½
14	⅝ " ½	½ " ⅜

No. 21.

$6 00.

3 Sets of Dies and 4 Taps.

THREADS TO INCH.	RIGHT HAND.	LEFT HAND.
9	1 to ¾ in.	1 to ¾ in.
12	¾ " ⅝	
12	⅝ " ½	

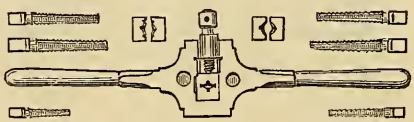
No. 23.

$5 00.

3 Sets of Dies and 3 Taps.

THREADS TO INCH.	RIGHT HAND.	LEFT HAND.
9	1 to ¾ in.	
10	¾ " ½	
14	½ " ⅜	

No. 25.

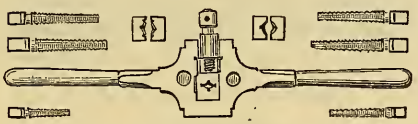


$6 50.

3 Sets of Dies and 6 Taps.

THREADS TO INCH.	RIGHT HAND.	LEFT HAND.
10	¾ to ⅝ in.	¾ to ⅝ in.
10	⅝ " 7/16	⅝ " 7/16
12	½ " ⅜	
12	7/16 " 5/16	

STOCKS AND DIES.

No. 27.  $6 50.

3 Sets of Dies and 6 Taps.

THREADS TO INCH.	RIGHT HAND.	RIGHT HAND.
10	¾ to ⅝ in.	$\frac{11}{16}$ to $\frac{9}{16}$ in.
12	⅝ " ½	$\frac{9}{16}$ " ½
16	½ " ⅜	$\frac{7}{16}$ " $\frac{5}{16}$

No. 32. $5 00.

4 Sets of Dies and 4 Taps.

THREADS TO INCH.	RIGHT HAND.	LEFT HAND.
10	¾ to ½ in.	¾ to ½ in.
14	½ " ⅜	½ " ⅜

No. 33. $4 00.

2 Sets of Dies and 2 Taps.

THREADS TO INCH.	RIGHT HAND.	LEFT HAND.
10	¾ to ½ in.	¾ to ½ in.

No. 34. $4 50.

3 Sets of Dies and 3 Taps.

THREADS TO INCH.	RIGHT HAND.	LEFT HAND.
10	¾ to ½	
12	$\frac{9}{16}$ " $\frac{5}{16}$	
16	$\frac{7}{16}$ " ¼	

STOCKS AND DIES.

No. 35. $4 00.

2 Sets of Dies and 2 Taps.

THREADS TO INCH.	RIGHT HAND.	LEFT HAND.
10	¾ to ½ in.	
14	½ " ⅜	

No. 37. $4 25.

3 Sets of Dies and 6 Taps.

THREADS TO INCH.	RIGHT HAND.	RIGHT HAND.
14	⅝ to ½ in.	½ to ⅜ in.
18	7/16 " 5/16	⅜ " 5/16
22	5/16 " ¼	¼ " ⅛

No. 38. $4 50.

3 Sets of Dies and 6 Taps.

THREADS TO INCH.	RIGHT HAND.	LEFT HAND.
12	⅝ to ½ in.	⅝ to ½ in.
12	9/16 " 7/16	9/16 " 7/16
18	7/16 " 5/16	
17	⅜ " 3/16	

No. 41. $3 25.

3 Sets of Dies and 6 Taps.

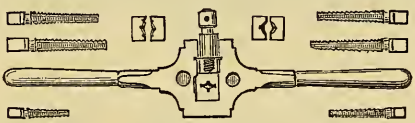
THREADS TO INCH.	RIGHT HAND.	RIGHT HAND.
16	½ to ⅜ in.	7/16 to 5/16 in.
20	5/16 " ¼	¼ " 3/16
26	¼ " 3/16	3/16 " ⅛

STOCKS AND DIES.

No. 42. $3 50.

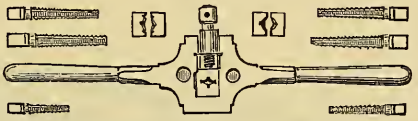
3 Sets of Dies and 6 Taps.

THREADS TO INCH.	RIGHT HAND.	LEFT HAND.
14	1/2 to 7/16 in.	1/2 to 7/16 in.
14	7/16 " 5/16	7/16 " 5/16
20	5/16 " 3/16	
20	1/4 " 1/8	

No. 45.  $5 50.

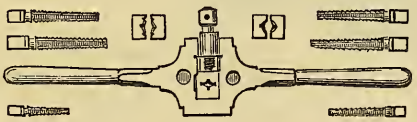
3 Sets of Dies and 6 Taps.

THREADS TO INCH.	RIGHT HAND.	LEFT HAND.
12	5/8 to 1/2 in.	5/8 to 1/2 in.
12	9/16 " 7/16	9/16 " 7/16
16	1/2 " 3/8	
16	7/16 " 5/16	

No. 47.  $5 50.

3 Sets of Dies and 6 Taps.

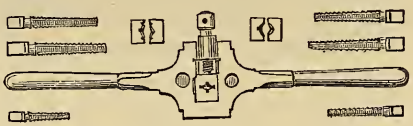
THREADS TO INCH.	RIGHT HAND.	RIGHT HAND.
12	5/8 to 1/2 in.	9/16 to 7/16 in.
14	1/2 " 3/8	7/16 " 5/16
18	3/8 " 5/16	5/16 " 1/4

No. 49.  $4 50.

3 Sets of Dies and 6 Taps.

THREADS TO INCH.	RIGHT HAND.	LEFT HAND.
14	1/2 to 3/8 in.	1/2 to 3/8 in.
14	7/16 " 5/16	7/16 " 5/16
18	3/8 " 5/16	
18	5/16 " 1/4	

STOCKS AND DIES.

No. 51.  $4 50.

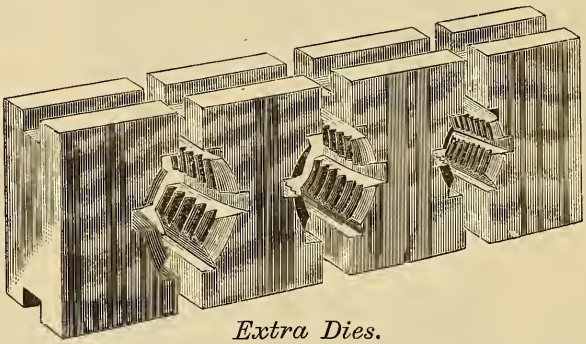
3 Sets of Dies and 6 Taps.

THREADS TO INCH.	RIGHT HAND.	RIGHT HAND.
14	½ to ⅜ in.	$\frac{7}{16}$ to $\frac{5}{16}$ in.
18	⅜ " $\frac{5}{16}$	$\frac{5}{16}$ " ¼
22	$\frac{5}{16}$ " ¼	¼ " $\frac{3}{16}$

No. 53. $2 75.

4 Sets of Dies and 4 Taps.

THREADS TO INCH.	RIGHT HAND.	LEFT HAND.
16	$\frac{5}{16}$ to $\frac{3}{16}$ in.	
20	¼ " ⅛	
24	$\frac{3}{16}$ " ⅛	
32	⅛ " $\frac{1}{16}$	

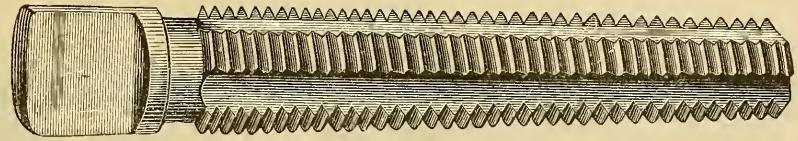


Extra Dies.

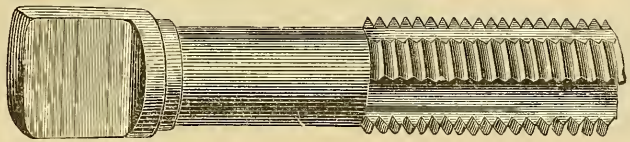
For Nos.	1	and	2	Stock	.....	$12	00
" "	3	"	4	"	.....	10	00
" "	5	"	5½	"	.....	8	00
" "	6			"	.....	6	00
" "	7	"	9	"	.....	3	50
" "	11	"	15	"	.....	3	00
" "	17	"	19	"	.....	2	50
" "	21	"	23	"	.....	2	00

For Nos.	25, 27 and 32			Stock	.....	$2	25
" "	33			"	.....	1	50
" "	34			"	.....	2	00
" "	35, 37, 38, 41 and 42			Stock		1	50
" "	45 and 47			Stock	.....	2	25
" "	49	"	51	"	.....	2	00
" "	53			"	.....	1	50

EXTRA TAPS.



Taper.



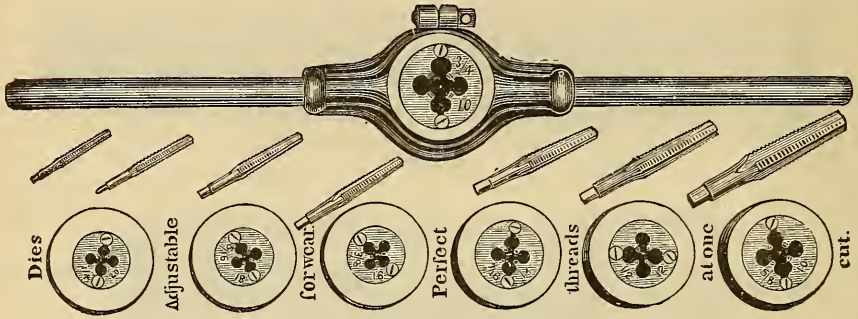
Plug.

STANDARD PRICE LIST.

Put up in Boxes.

Size.	Number of Threads to Inch.				Price Each.
	Right.	Taps in each Box.	Left.	Taps in each Box.	
1/8 in.	30 and 32	6	----------	--	$0 30
3/16	24, 26 and 28	6	----------	--	30
1/4	18, 20, 22, 24 and 26	6	----------	--	30
5/16	16, 18, 20 and 22	6	----------	--	30
3/8	12, 14, 16 and 18	6	----------	--	35
7/16	12, 14, 16 and 18	6	14	6	40
1/2	12, 14 and 16	6	12 and 14	4	40
9/16	12 and 14	6	12	4	50
5/8	10, 12 and 14	6	10 and 12	4	50
3/4	7, 8, 9, 10 and 12	6	10 and 12	4	65
7/8	9 and 10	4	9	4	90
1	7, 8 and 9	2	8 and 9	2	1 25
1 1/4	6, 7, 8 and 9	2	8 and 9	2	1 75
1 1/2	6, 7 and 8	2	6, 7 and 8	2	3 00

THE LIGHTNING SCREW PLATE.



PRICE COMPLETE.

Size B includes Stock, Dies and Taper Taps $25 00
" D " " " " " 60 00

Size B cuts bolts from ¼ to ¾ in., and pipe from ⅛ to ½ in.
" D " " ⅞ " 1½ " " ¾ " 1½

Size B Stock, 23 in. long, usually fitted up as follows: with ¼, $\frac{5}{16}$, ⅜, $\frac{7}{16}$, ½, ⅝ and ¾ in.—seven sizes.

Size D Stock, 53 in. long, usually fitted up as follows: with ⅞, 1, 1⅛, 1¼, 1⅜ and 1½ in.—six sizes.

This will be acknowledged upon examination to be the most perfect tool ever invented for its purposes.

It is warranted to do five times the work possible with any other screw plate.

The threads cut with this plate are more perfect than can be made with any other hand tool, and equal to the best machine work, being neatly and sharply cut out of the bolts, instead of being bruised upon them, so that no burr is raised above the true size.

It finishes its work at one cut, notwithstanding which its operation is easier than the first trial with the common plate. A man can cut 1½ in. bolts without help, say threads 3 in. long, ONE IN THREE MINUTES.

Nuts and bolts threaded with it need not be matched and kept together—they always correspond without trying and fitting.

The dies are adjustable for wear, so as to keep the exact size of the taps, notwithstanding long use, and to allow of nuts and bolts for different purposes being made to fit together tightly or loosely, as desired. Until absolutely worn out they are always exactly true. When used up they can be replaced, the plate and collets remaining good.

The collets holding the dies have guides for starting bolts true, but when desirable to cut close under the heads of bolts, the face side of the die is used.

THE LIGHTNING SCREW PLATE.

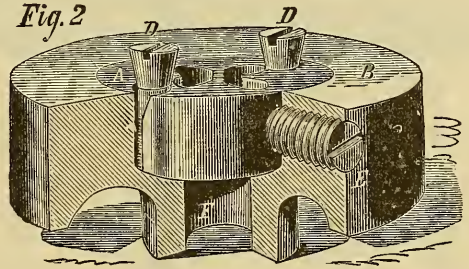
PRICE LIST OF TAPS AND DIES.

Sizes, Inches.	Number Threads to inch.	Hand Taps, each.	Dies, each.	Machine Taps, each.	Pipe Dies, each.
1/4	18 and 20	$0 50	$1 00	$0 75	$1 50
5/16	16 " 18	55	1 00	90	----
3/8	14 " 16	60	1 15	1 05	1 90
7/16	12, 14 " 16	70	1 30	1 20	----
1/2	12, 13 " 14	80	1 50	1 40	2 35
9/16	12 " 14	90	1 75	1 60	----
5/8	10, 11 " 12	1 00	1 90	1 80	----
11/16	11 " 12	1 20	2 10	2 00	----
3/4	10	1 40	2 35	2 25	3 75
13/16	10	1 60	2 60	2 50	----
7/8	9 and 10	1 80	3 00	2 87	----
15/16	9	2 00	3 40	3 25	----
1	8	2 25	3 75	3 63	5 00
1 1/8	7 and 8	2 50	4 40	4 25	----
1 1/4	7	3 00	5 00	4 88	5 50
1 3/8	6	3 50	5 75	5 62	5 50
1 1/2	6	4 00	7 00	6 75	5 50
1 5/8	5	----	----	8 00	----
1 3/4	5	----	----	9 25	----

Plug and Bottoming, same price as Taper Taps.
Plate B, $4 00; Collets, $0 75 each.
" D, 10 00; " 1 00 "
Machine Collets, $1 00 each.

EXPLANATION OF PATENT DIE.

Fig. 2

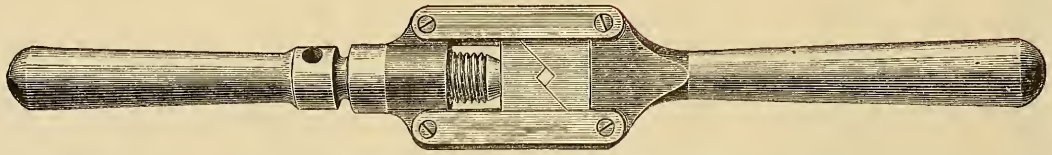


A—Die. *B*—Collet. *D*—Taper Screws regulating the Cut.
E—Binding Screws. *F*—Guide for Bolts.

In adjusting the die, the binding screws *E* are first slackened, and the size required fixed by moving the taper-headed screws *DD* in or out, after which the binding screws *E* are set very tight the last thing.

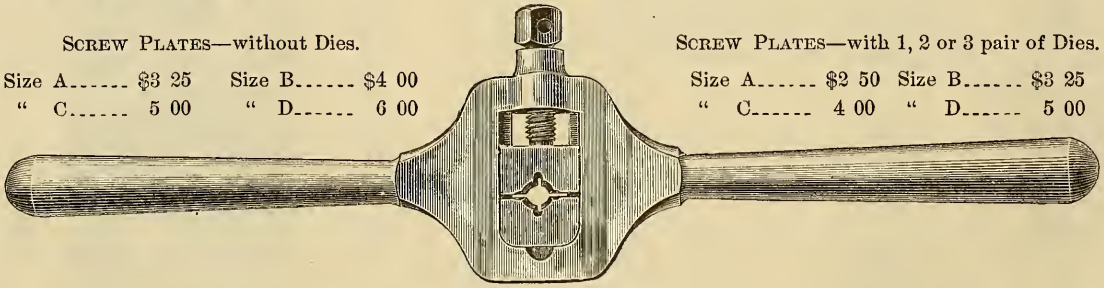
SCREW PLATES AND TAP WRENCHES.

MORSE TWIST DRILL CO.



Patent Adjustable Tap Wrench.

A.	Fitting Taps from $\frac{1}{4}$ to $\frac{5}{8}$ in. inclusive, and Reamers from $\frac{1}{4}$ to $\frac{13}{16}$ in. inclusive	$3 00
B.	" " " $\frac{1}{2}$ " 1 " " " " $\frac{3}{8}$ " 1 "	4 00
C.	" " " $\frac{7}{8}$ " $1\frac{1}{4}$ " " " " $\frac{11}{16}$ " $1\frac{5}{16}$ "	5 00
	Fitting Taps from $\frac{1}{8}$ to $\frac{1}{4}$ in. inclusive	2 25



Screw Plate and Dies.

SCREW PLATES—without Dies.

Size A..... $3 25 Size B..... $4 00
" C..... 5 00 " D..... 6 00

SCREW PLATES—with 1, 2 or 3 pair of Dies.

Size A..... $2 50 Size B..... $3 25
" C..... 4 00 " D..... 5 00

Size A.	With 3 pair Dies cutting $\frac{1}{4}\frac{2}{0}$ $\frac{3}{8}\frac{1}{6}$ $\frac{1}{2}\frac{1}{2}$	$5 00
B.	" 4 " " " $\frac{3}{8}\frac{1}{6}$ $\frac{1}{2}\frac{1}{2}$ $\frac{5}{8}\frac{1}{1}$ $\frac{3}{4}\frac{1}{0}$	8 00
C.	" 4 " " " $\frac{1}{2}\frac{1}{2}$ $\frac{5}{8}\frac{1}{1}$ $\frac{3}{4}\frac{1}{0}$ $\frac{7}{8}\frac{1}{9}$	10 00
D.	" 4 " " " $\frac{7}{8}\frac{1}{9}$ $1\frac{1}{8}$ $1\frac{1}{4}\frac{1}{7}$	13 00

Single Dies, Size A..... $1 00 Size B..... 1 25 Size C..... 1 75 Size D..... 2 00

Screw Plates can have the following sizes of Dies with threads to correspond with those of the Volute Taps: Size A, $\frac{1}{4}$ to $\frac{5}{8}$ in.; Size B, $\frac{1}{4}$ to $\frac{7}{8}$ in.; Size C, $\frac{3}{8}$ to 1 in.; Size D, $\frac{13}{16}$ to $1\frac{1}{2}$ in.

No. 1 Screw Plate, for Model Makers and Jewelers, cutting $\frac{1}{8}\frac{4}{8}$, $\frac{5}{3}\frac{4}{2}\frac{0}{}$, $\frac{3}{1}\frac{3}{6}\frac{2}{}$, $\frac{7}{3}\frac{2}{2}\frac{4}{}$, $\frac{1}{4}\frac{2}{2}\frac{0}{}$; with 5 pair Dies and 5 Taps, $5 25; Dies each, 50 cents; Complete Plate and Wrench, $7 25.

Above Plates are of an improved pattern and finish, are light and durable, and have recently been so perfected as to admit of a change of Die quickly. The Dies and Plates are carefully finished to standard gauges, and are warranted to be accurate in size and carefully tempered.

MACHINE OR NUT TAPS.

MORSE TWIST DRILL CO.

V OR FRANKLIN INSTITUTE SHAPE OF THREAD. LONG SHANK.

STANDARD LIST.

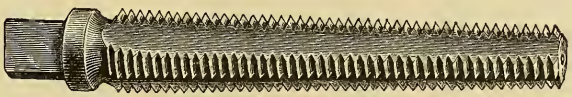
Diam.	Length.	No. Threads to inch.	Price each.	Diam.	Length.	No. Threads to inch.	Price each.
1/4 in.	4 1/2 in.	16, 18 and 20	$0 60	1 in.	12 in.	8	$2 80
5/16	5 1/8	16 " 18	70	1 1/8	12 5/8	7 and 8	3 20
3/8	5 3/4	14 " 16	80	1 1/4	13 1/4	7 " 8	3 70
7/16	6 3/8	12, 14 " 16	90	1 3/8	13 7/8	6	4 20
1/2	7	12, 13 " 14	1 00	1 1/2	14 1/2	6	4 70
9/16	7 5/8	12 " 14	1 15	1 5/8	15 1/8	5 " 5 1/2	5 30
5/8	8 1/8	10, 11 " 12	1 30	1 3/4	15 3/4	5	6 00
11/16	8 7/8	11 " 12	1 45	1 7/8	16 3/8	4 1/2 " 5	6 80
3/4	9 1/2	10	1 60	2	17	4 1/2	7 70
13/16	10 1/8	10	1 80				
7/8	11 1/16	9 " 10	2 10				
15/16	11 11/16	9	2 40				

We keep in stock the above 1/32 over size for rough iron. In ordering, always state exact diameter and thread wanted. When exact duplicates are wanted, special orders should always be accompanied by a stub with nut fitting same.

Hubs or Master Taps are 25 per cent. higher than Nut Taps. State, in ordering, whether for solid or open Dies.

TAPER TAPS.

MORSE TWIST DRILL CO.



Diam.	Length.	No. Threads to inch.	Price each.	Diam.	Length.	No. Threads to inch.	Price each.
1/4 in.	2 3/4 in.	16, 18 and 20	$0 35	3/4 in.	5 13/16 in.	10, 11 and 12	$1 00
5/16	2 7/8	16 " 18	40	13/16	6	10	1 15
3/8	3 1/2	14 " 16	45	7/8	6 1/8	9 " 10	1 30
7/16	3 13/16	14 " 16	50	15/16	6 3/8	9	1 45
1/2	4 5/16	12, 13 " 14	55	1	6 13/16	8	1 60
9/16	4 3/4	12 " 14	65	1 1/8	7 1/4	7 " 8	1 90
5/8	5 1/8	10, 11 " 12	75	1 1/4	8	7 " 8	2 30
11/16	5 3/8	11 " 12	85				

The Blacksmith Taps are a little more expensive than those ordinarily sold by the hardware trade. They are very carefully made, are accurate as to lead and temper, and being relieved by our patent process, are more durable, and will cut a thread with ease.

MACHINIST'S VOLUTE TAPS.

Taper.

Plug.

Bottoming.

SETS OF MACHINIST'S HAND TAPS.

V OR FRANKLIN INSTITUTE SHAPE OF THREAD.

Unless advised to the contrary, we fill orders with **V** Threads.

3 Taps to set — Taper, Plug, and Bottomer.

Diameter.	Length.	No. Threads to in.	Price each.	Price per set.
1/4	2 1/16	16, 18 and 20	$0 45	$1 35
5/16	2 7/8	16 " 18	50	1 50
3/8	3 1/8	14, 16 " 18	55	1 65
7/16	3 5/8	14 " 16	60	1 80
1/2	4 1/8	12, 13 " 14	70	2 10
9/16	4 1/2	12 " 14	80	2 40
5/8	4 3/4	10, 11 " 12	90	2 70
11/16	5 1/8	11 " 12	1 05	3 15
3/4	5 5/8	10, 11 " 12	1 20	3 60
13/16	5 13/16	10	1 40	4 20
7/8	6	9 " 10	1 60	4 80
15/16	6 1/8	9	1 80	5 40
1	6 1/2	8	2 00	6 00
1 1/8	6 5/8	7 " 8	2 25	6 75
1 1/4	6 7/8	7	2 60	7 80
1 3/8	7 1/4	6	3 00	9 00
1 1/2	7 5/8	6	3 50	10 50
1 5/8	8 1/8	5 " 5 1/2	4 20	12 60
1 3/4	8 1/16	5	5 00	15 00
1 7/8	9 1/16	4 1/2 " 5	5 80	17 40
2	9 3/4	4 1/2	6 70	20 10

We keep in stock the above — 1/32 over size — and make them to order without extra charge 1/64 or 1/100 full.

MACHINE SCREW TAPS.

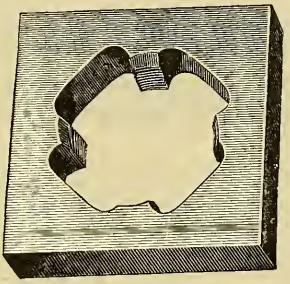
MORSE TWIST DRILL CO.

STANDARD LIST.

Diameter.	Wire Gauge Size.	No. Threads to inch.	Price each.	Price per dozen.
7–64	No. 4	36 and 40	$0 35	$4 00
9–64	6	30, 32, 36 " 40	35	4 00
1–8	—	30, 32, 36 " 48	35	4 00
5–32	8	30 " 32	35	4 00
3–16	10	20, 22 " 24	35	4 00
7–32	12	20, 22 " 24	35	4 00
1–4	14	16, 18, 20, 22 " 24	38	4 40
17–64	16	16, 18, 20 " 22	38	4 40
9–32	18	16, 18 " 20	38	4 40
5–16	20	16, 18 " 20	45	5 30
3–8	24	14, 16 " 18	45	5 30

All orders for less than half dozen of a size at single price.

MACHINE OR SOLID BOLT DIES.

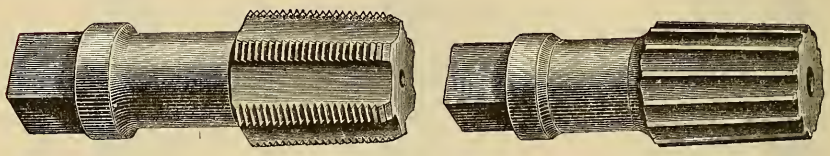


STANDARD LIST.

Diameter.	No. Threads to inch.	Size of Square.	Price each.
¼ in.	20	2½	$1 80
5/16	18	2½	1 80
⅜	16	2½ ½ in. thick.	1 80
7/16	14	2½	1 80
½	12	2½	1 80
9/16	11	2½	2 00
⅝	10	2½ ¾ in. thick.	2 20
¾	9	2½	2 40
⅞	8	2½	2 70
1	7	2½	3 00
1⅛	7	2½	3 30
1¼	6	2½ 1 in. thick.	3 60
1⅜	6	3	3 90
1½	5½	3	4 20
1⅝	5	3 and 1¼ in. thick.	5 40
1¾	5	3½ " 1½ "	6 50
1⅞	4½	3¾ " 2 "	7 50
2			

The above are kept in stock — by sixteenths and thirty-seconds to 1 in.; by eighths and thirty-seconds from 1 in. to 1½ in.

PIPE TAPS AND REAMERS.



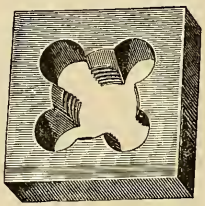
Price,	$1 12	1 25	1 50	1 87	2 50	3 12	3 75	4 62	6 25	10 50	15 00
Diameter,	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3 in.

PIPE STOCKS AND DIES

WITH BUSHINGS.

No. 1.	Solid Plate and Guides	cutting ⅛, ¼, ⅜, ½ in.	$8 00
2.	Screw Plate, Solid Dies	" ¼, ⅜, ½, ¾, 1	14 00
3.	" " "	" ¾, 1, 1¼	14 00
4.	" " with Driving Screw,	" 1¼, 1½, 2	20 00
5.	" " " " "	" 2½, 3	40 00

SOLID PIPE DIES.



No. 2.	2¼ in. Square R. or L. Size	¼, ⅜, ½, ¾, 1 in.	$1 80
3.	3 " " "	¾, 1, 1¼,	2 35
4.	3¾ " " "	1¼, 1½, 2	3 30
5.	5 " " "	2½, 3	9 00
6.	7 " " "	3½, 4	25 00

MORSE TWIST DRILLS.

STANDARD LIST.

PATENT INCREASE TWIST AND AMERICAN STANDARD DRILLS.

TAPER SHANKS.

Diameter of Drill.	Length, inches.	Price each.	Diameter of Drill.	Length, inches.	Price each.
1/4 in.	6 1/8	$0 65	1 5/32 in.	11 7/8	$5 00
9/32	6 1/4	70	1 3/16	12	5 25
5/16	6 3/8	75	1 7/32	12 1/8	5 50
11/32	6 1/2	80	1 1/4	12 1/2	5 75
3/8	6 3/4	85	1 9/32	14 1/8	6 00
13/32	7	90	1 5/16	14 1/4	6 25
7/16	7 1/4	1 00	1 11/32	14 3/8	6 50
15/32	7 1/2	1 10	1 3/8	14 1/2	6 75
1/2	7 3/4	1 20	1 13/32	14 5/8	7 00
17/32	8	1 30	1 7/16	14 3/4	7 25
9/16	8 1/4	1 40	1 15/32	14 7/8	7 50
19/32	8 1/2	1 50	1 1/2	15	7 75
5/8	8 3/4	1 65	1 17/32	15 1/8	8 00
21/32	9	1 80	1 9/16	15 1/4	8 25
11/16	9 1/4	2 00	1 19/32	15 3/8	8 50
23/32	9 1/2	2 20	1 5/8	15 1/2	8 75
3/4	9 3/4	2 40	1 21/32	15 5/8	9 00
25/32	9 7/8	2 60	1 11/16	15 3/4	9 25
13/16	10	2 80	1 23/32	15 7/8	9 50
27/32	10 1/4	3 00	1 3/4	16	9 75
7/8	10 1/2	3 20	1 25/32	16 1/8	10 25
29/32	10 5/8	3 40	1 13/16	16 1/4	10 50
15/16	10 3/4	3 60	1 27/32	16 3/8	10 75
31/32	10 7/8	3 80	1 7/8	16 1/2	11 00
1	11	4 00	1 29/32	16 1/2	11 25
1 1/32	11 1/8	4 20	1 15/16	16 1/2	11 50
1 1/16	11 1/4	4 40	1 31/32	16 1/2	11 75
1 3/32	11 1/2	4 60	2	16 1/2	12 00
1 1/8	11 3/4	4 80	----	----	-----

Above can be had by 64ths, if desired.

STEEL SOCKETS FOR HOLDING TAPER SHANK DRILLS.

No. 1.	Socket for	Morse	Taper	Drills,	1/4	to	13/32	inclusive ---------- $1 40
2.	"	"	"		5/8	"	29/32	" ---------- 2 20
3.	"	"	"		15/16	"	1 1/4	" ---------- 3 00
4.	"	"	"		1 5/16	"	2	" ---------- 4 40

No. 1.	Socket for	Standard	Taper Drills	---------- 1 35
2.	"	"	"	---------- 1 65
3.	"	"	"	---------- 2 10
4.	"	"	"	---------- 2 65
5.	"	"	"	---------- 4 40

MORSE TWIST DRILLS.

STANDARD LIST.

PATENT INCREASE TWIST AND AMERICAN STANDARD DRILLS.

STRAIGHT SHANKS.

Diameter of Drill.	Length, inches.	Price per doz.	Price each.	Diameter of Drill.	Length, inches.	Price per doz.	Price each.
1/16	2 1/2	$1 20	$0 11	19/64	4 3/8	$4 95	$0 43
5/64	2 5/8	1 30	12	5/16	4 1/2	5 30	46
3/32	2 3/4	1 40	13	21/64	4 5/8	5 70	50
7/64	2 7/8	1 60	14	11/32	4 3/4	6 20	54
1/8	3	1 80	16	23/64	4 7/8	6 70	58
9/64	3 1/8	2 00	18	3/8	5	7 20	62
5/32	3 1/4	2 20	20	25/64	5 1/8	7 70	66
11/64	3 3/8	2 45	22	13/32	5 1/4	8 10	70
3/16	3 1/2	2 70	24	27/64	5 3/8	8 45	74
13/64	3 5/8	3 00	26	7/16	5 1/2	8 80	78
7/32	3 3/4	3 30	29	29/64	5 5/8	9 20	82
15/64	3 7/8	3 60	32	15/32	5 3/4	9 65	86
1/4	4	3 95	35	31/64	5 7/8	10 10	90
17/64	4 1/8	4 30	38	1/2	6	10 55	94
9/32	4 1/4	4 60	40				

The above comprises the Jobber's and Machinist's Sets.

For very exact work, a gauge plainly marked should accompany an order.

FOR COE'S MACHINE DRILL.

Sizes	1/8	3/16	1/4	5/16	3/8	7/16	1/2 in.
Price	$0 90	1 05	1 05	1 10	1 10	1 15	1 25 each.
Sizes	9/16	5/8	11/16	3/4	13/16	7/8	1 in.
Price	$1 35	1 50	1 65	1 90	2 10	2 35	3 00 each.

NOTICE.

To prevent confusion in filling orders, parties ordering will please state which taper is desired.

Straight Shank Drills, Taper Lengths, at Taper Shank prices.

The Standard Taper corresponds with the Manhattan Taper.

Drills of any size or length, with Straight or Taper Shanks, made to order, and to fit any socket desired.

The Patent Grinding Line is applied to Patent Increase Twist Drills only. Parties ordering will please state whether they would have the Grinding Line applied or not.

MORSE TWIST DRILLS.

STANDARD LIST.

PATENT INCREASE TWIST AND AMERICAN STANDARD DRILLS.

STUBS' STEEL WIRE GAUGE,

STRAIGHT SHANKS.

Numbers by Gauge.	Length, inches.	Price per doz.	Price each.	Numbers by Gauge.	Length, inches.	Price per doz.	Price each.
1 to 5	4	$2 35	$0 22	31 to 25	2 5/8	$1 55	$0 15
6 " 10	3 11/16	2 25	21	36 " 40	2 1/16	1 35	14
11 " 15	3 1/2	2 15	20	41 " 45	2 1/4	1 25	13
16 " 20	3 1/4	2 05	19	46 " 50	2 1/16	1 15	12
21 " 25	3 1/16	1 95	18	51 " 65	1 3/4	1 15	11
26 " 30	2 13/16	1 75	16				

BIT STOCK DRILLS.

Diameter of Drill.	Price per doz.	Price each.	Diameter of Drill.	Price per doz.	Price each.
1/16	$1 75	$0 15	5/16	$6 50	$0 60
3/32	2 00	20	11/32	7 50	65
1/8	2 50	25	3/8	8 50	75
5/32	3 00	30	13/32	9 50	85
3/16	3 50	35	7/16	10 75	95
7/32	4 25	40	15/32	12 00	1 05
1/4	5 00	45	1/2	13 25	1 15
9/32	5 75	50			

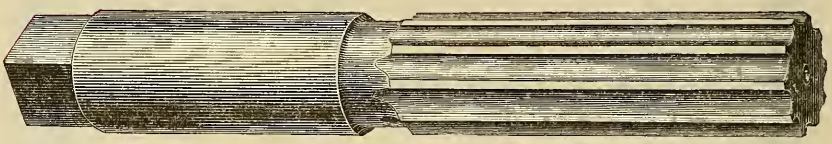
Price per set, 1/16 to 1/4 in. by 32ds; 1/4 to 3/8 in. by 16ths, boxed, $3 10.

PRICES OF DRILLS PER SET.

		Patent Increase Twist Drill.	Am. Stand. Taper Drill Sockets.
No. 1.	Set of Taper Shank Drills, 1/4 to 1 in., varying by 16ths	$25 00	
2.	" " " 3/8 " 1 1/4 diam., varying by 16ths,	44 00	
3.	" " " 3/8 " 3/4, varying by 32ds, 3/4 to 1 1/4 in. diam., varying by 16ths	53 00	
4.	Set of Taper Shank Drills, 3/8 to 3/4, varying by 32ds, and from 3/4 to 2 in. diam., varying by 16ths	162 00	
5.	Set Drills, Straight Shanks, 1/16 to 1/2 in., mounted, varying by 64ths	12 75	
6.	Set Drills, Straight Shanks, 1/16 to 1/2 in., mounted, varying by 32ds	6 50	
7.	Set Drills, from 60 to 3/8 in., mounted	11 00	
8.	" Steel Wire Gauge, from 1 to 60, mounted	8 75	
9.	Half Set Drills, Steel Wire Gauge, alternate Nos. from 1 to 60, mounted	4 75	
10.	Jeweler's Set Drills, neatly mounted in a mahogany case with cap, containing 36 Drills, from No. 30 (1/8 in.) to No. 65, Steel Wire Gauge	5 25	
11.	Set of Taper Shank Drills, 3/8 to 2 in. by 32ds	300 00	
Set of Steel Sockets, to hold Drills from 1/4 to 1 1/4 in.		6 60	$7 75
One large Steel Socket to hold Drills from 1 5/16 to 2 in. diameter		4 40	4 40
Adjustable Chuck holding from 1/16 to 5/8 in., with springs to open jaws,		6 00	
Center-Drill Chuck		2 50	
Center-Drills, 25 cents each	per doz.	2 75	

SOLID REAMERS.

MORSE TWIST DRILL AND MACHINE CO.

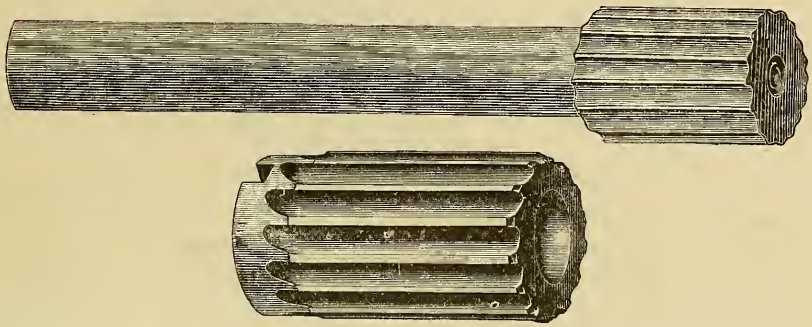


STANDARD LIST.

Jobber's Set.				Short Set.			
Diam. of Reamer.	Full Length.	Length of Flute.	Price each.	Diam. of Reamer.	Full Length.	Length of Flute.	Price each.
1/4 in.	4 in.	2 in.	$1 40	1/4 in.	3 3/4 in.	2 1/4 in.	$1 35
5/16	4 1/2	2 1/4	1 55	5/16	4	2 1/4	1 45
3/8	5	2 1/2	1 70	3/8	4 1/4	2 1/4	1 60
7/16	5 1/2	2 3/4	1 90	7/16	4 1/2	2 5/16	1 75
1/2	6	3	2 10	1/2	4 3/4	2 7/16	1 90
9/16	6 1/2	3 1/4	2 30	9/16	5	2 9/16	2 00
5/8	7	3 1/2	2 50	5/8	5 1/4	2 5/8	2 15
11/16	7 11/16	3 13/16	2 80	11/16	5 1/2	2 3/4	2 30
3/4	8 3/8	4 3/16	3 10	3/4	5 3/4	2 15/16	2 50
13/16	9 1/16	4 1/2	3 40	13/16	6	3 1/16	2 70
7/8	9 11/16	4 13/16	3 70	7/8	6 3/8	3 3/16	2 95
15/16	10 1/4	5 1/8	4 10	15/16	6 3/4	3 5/16	3 20
1	10 7/8	5 7/16	4 50	1	7 1/8	3 9/16	3 45
1 1/16	11 1/4	5 5/8	4 90	1 1/16	7 1/2	3 3/4	3 70
1 1/8	11 5/8	5 13/16	5 30	1 1/8	7 7/8	4	4 00
1 3/16	12	6	5 80	1 3/16	8 1/4	4 1/4	4 40
1 1/4	12 1/4	6 1/8	6 30	1 1/4	8 3/4	4 1/2	4 80
1 5/16	12 7/16	6 3/16	6 80	1 5/16	9	4 3/4	5 20
1 3/8	12 5/8	6 5/16	7 40	1 3/8	9 1/2	5	5 75
1 7/16	12 13/16	6 3/8	8 00	1 7/16	9 3/4	5 1/4	6 30
1 1/2	13	6 1/2	8 70	1 1/2	10	5 1/2	6 85
1 9/16	13	6 1/2	9 40	1 9/16	10 1/4	5 1/2	7 60
1 5/8	13	6 1/2	10 10	1 5/8	10 5/8	5 5/8	8 45
1 11/16	13 1/2	6 3/4	10 80	1 11/16	10 3/4	5 5/8	9 30
1 3/4	13 1/2	6 3/4	11 50	1 3/4	11	5 3/4	10 00
1 13/16	13 1/2	6 3/4	12 50	1 13/16	11 1/4	5 3/4	10 70
1 7/8	14	7	13 50	1 7/8	11 1/2	5 7/8	11 40
1 15/16	14	7	14 50	1 15/16	11 3/4	5 7/8	12 20
2	14	7	15 50	2	12	6	13 00

CHUCK AND SHELL REAMERS.

MORSE TWIST DRILL AND MACHINE CO.



Chuck Reamers.

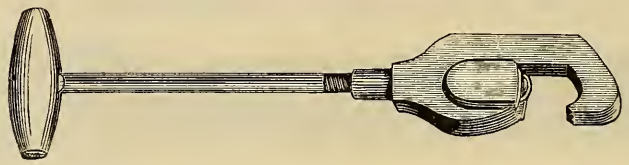
Diameter of Reamer.	Full Length.	Length of Flute.	Price each.
1/4 less .005	6 in.	7/8 in.	$0 90
5/16 " .005	6	7/8	1 00
3/8 " .005	7	1	1 10
7/16 " .005	7	1	1 20
1/2 " .005	8	1 1/8	1 30
9/16 " .005	8	1 1/8	1 45
5/8 " .005	9	1 1/4	1 60
11/16 " .005	9	1 1/4	1 75
3/4 " .005	9 1/2	1 3/8	1 90
13/16 " .005	9 1/2	1 3/8	2 05
7/8 " .005	10	1 1/2	2 20
15/16 " .005	10	1 1/2	2 35
1 in. " .005	10 1/2	1 5/8	2 50
1 1/16 " .005	10 1/2	1 5/8	2 65
1 1/8 " .005	11	1 3/4	2 80
1 3/16 " .005	11	1 3/4	2 95
1 1/4 " .005	11 1/2	1 7/8	3 10
1 5/16 " .005	11 1/2	1 7/8	3 25
1 3/8 " .005	12	2	3 40
1 7/16 " .005	12	2	3 60
1 1/2 " .005	12 1/2	2 1/8	3 80
1 9/16 " .005	12 1/2	2 1/8	4 00
1 5/8 " .005	13	2 1/4	4 20
1 11/16 " .005	13	2 1/4	4 40
1 3/4 " .005	13 1/2	2 3/8	4 60
1 13/16 " .005	13 1/2	2 3/8	4 85
1 7/8 " .005	14	2 1/2	5 10
1 15/16 " .005	14	2 1/2	5 35
2 " .005	14	2 1/2	5 60

The above Reamers are finished $\frac{1}{200}$ of an inch smaller than Whitworth's Standard Gauges.

Shell Reamers.

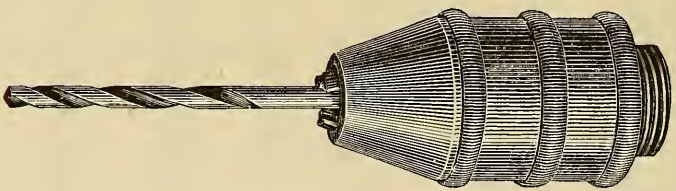
Diam. of Reamer.	Length.	Size Hole.	Price each.
3/4 in.	2 1/2 in.	1/2 in.	$1 60
13/16	2 1/2	1/2	1 60
7/8	2 1/2	1/2	1 70
15/16	2 1/2	1/2	1 70
1	2 3/4	5/8	1 80
1 1/16	2 3/4	5/8	1 80
1 1/8	2 3/4	5/8	1 90
1 3/16	2 3/4	5/8	2 00
1 1/4	2 3/4	5/8	2 20
1 5/16	3	3/4	2 40
1 3/8	3	3/4	2 60
1 7/16	3	3/4	2 80
1 1/2	3	3/4	3 10
1 9/16	3	3/4	3 40
1 5/8	3	3/4	3 70
1 11/16	3 1/2	1	4 10
1 3/4	3 1/2	1	4 50
1 13/16	3 1/2	1	4 90
1 7/8	3 1/2	1	5 30
1 15/16	3 1/2	1	5 80
2	3 1/2	1	6 30
2 1/16	3 3/4	1 1/4	6 80
2 1/8	3 3/4	1 1/4	7 30
2 3/16	3 3/4	1 1/4	7 70
2 1/4	3 3/4	1 1/4	8 10
2 5/16	3 3/4	1 1/4	8 50
2 3/8	3 3/4	1 1/4	8 75
2 7/16	3 3/4	1 1/4	9 00
2 1/2	3 3/4	1 1/4	9 25
2 9/16	4	1 1/2	9 75
2 5/8	4	1 1/2	10 00
2 11/16	4	1 1/2	10 75
2 3/4	4	1 1/2	11 50
2 13/16	4	1 1/2	12 25
2 7/8	4	1 1/2	13 00
2 15/16	4	1 1/2	13 75
3	4	1 1/2	14 50

STANWOOD PIPE CUTTER.



Number.	Cuts Pipe	Price.	Cutter Wheels.	Price.	Cutter Blocks.	Price.
1	⅛ to ¾	$7 50	No. 1	$0 60	No. 1	$2 50
2	¾ " 2	9 00	2	75	2	4 00
3	2 " 3	18 00	3	1 25		

BEACH'S PATENT DRILL CHUCK.



No. 0	holds from	0 to ⅛	in. diameter (for jewelers)	$8 00
1	"	0 " ¼	"	9 00
2	"	0 " ⅜	"	10 00
3	"	0 " ½	"	12 00
4	"	1/16 " ⅝	"	13 50

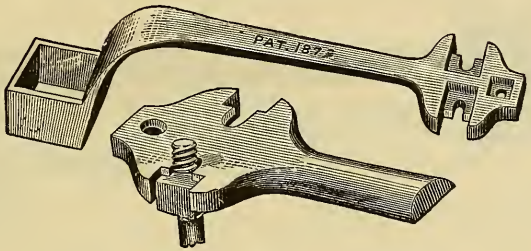
TWIST DRILL GRINDING MACHINES.

MORSE'S PATENT.

No. 1. For grinding Drills of sizes below ½ in..... $12 00 each.
2. For sizes varying from ⅜ to 2 in..... 24 00 "

Extra rests for grinding left hand Drills furnished for $2 75 and $5 50.
By removing the rest, the machine may be used for an emery grinder.
Extra Wheels furnished at the lowest rates.

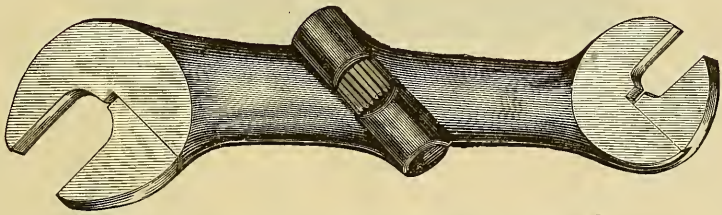
SCREW WRENCHES.



Cooper's Common Sense Wrench.

MADE OF BEST MALLEABLE IRON.

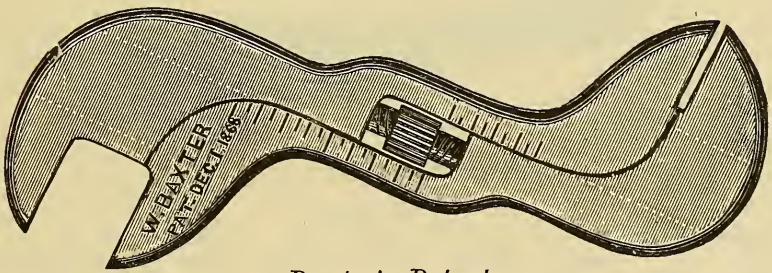
Sizes	⅞	1	1⅛	1¼	in.
Japanned	$1 50	1 75	2 00	2 25	per dozen.



Davis' Improved Double End Wrench.

6 in.	$9 00	per dozen.
8	12 00	"
10	18 00	"

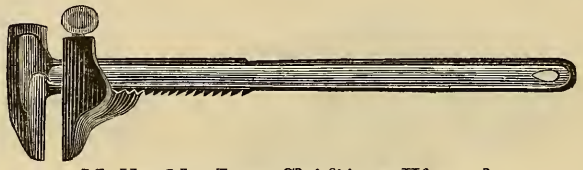
Easily operated with one hand, and indispensable for certain classes of work.



Baxter's Patent.

6 in.	$12 00	per dozen.
8	13 50	"
10	18 00	"
12	22 00	"
15	30 00	"
21	60 00	"

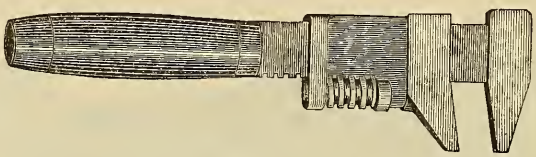
SCREW WRENCHES.



Malleable Iron Shifting Wrench.

No. 0. 10½ in. long, fitted complete ..... $3 50 per dozen.
00. 15 " " ..... 4 50 " .

The above Wrench can be furnished without being fitted up with thumb-screw at same price of other malleable irons, but are preferred as shown above, being ready for use. They are well adapted for farmers and all others desiring a very cheap and useful Wrench.



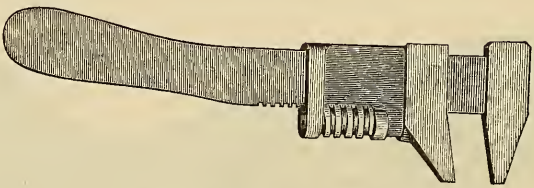
Walton Wood Handle.

BRIGHT.

Lengths	6	8	10	12	15	18	in.
Price	$10 00	12 00	14 00	16 00	26 00	32 00	per dozen.

BLACK.

Lengths	6	8	10	12	15	18	in.
Price	$9 00	10 00	12 00	14 00	24 00	30 00	per dozen.



Walton Iron Handle.

POLISHED.

Lengths	6	8	10	12	15	18	in.
Price	$9 50	10 50	13 50	15 50	25 50	31 50	per dozen.

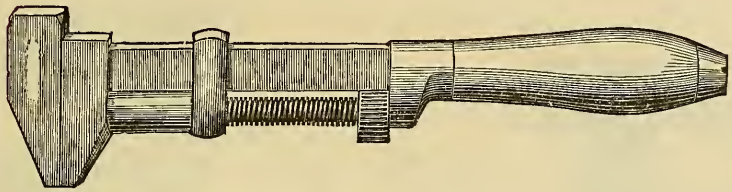
UNPOLISHED.

Lengths	6	8	10	12	15	18	in.
Price	$8 50	9 50	11 50	13 50	23 50	29 50	per dozen.

FULL CASES.

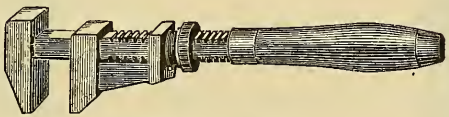
Lengths	6	8	10	12	15	18	in.
Number in Case	6	6	6	6	3	2	dozen.

SCREW WRENCHES.



Imitation Coes' Pattern.

Bright.		Black.	
LENGTHS.	PER DOZEN.	LENGTHS.	PER DOZEN.
6 in.	$10 00	6 in.	$9 00
8	11 00	8	10 00
10	14 00	10	12 00
12	16 00	12	14 00
15	26 00	15	24 00
18	32 00	18	30 00
21	38 00	21	36 00



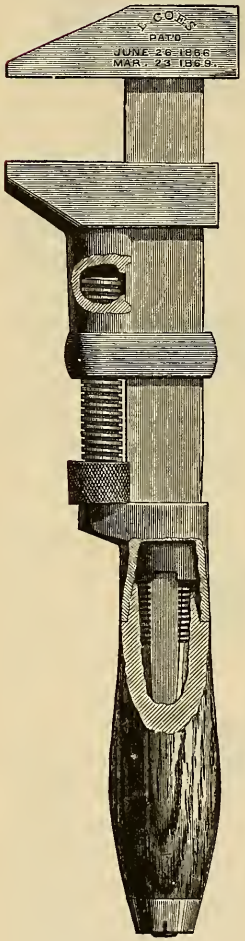
Taft's Patent.

Bright.		Black.	
LENGTHS.	PER DOZEN.	LENGTHS.	PER DOZEN.
6 in.	$10 00	6 in.	$9 00
8	11 00	8	10 00
10	14 00	10	12 00
12	16 00	12	14 00
15	26 00	15	24 00
18	32 00	18	30 00
21	38 00	21	36 00

FULL CASES.

Lengths	6	8	10	12	15	18	21	in.
Number in Case	6	6	6	6	3	2	1	dozen.

SCREW WRENCHES.



L. Coes' Patent.

BRIGHT.

LENGTHS.	PER DOZEN.
6 in.	$10 00
8	11 00
10	14 00
12	16 00
15	26 00
18	32 00
21	38 00

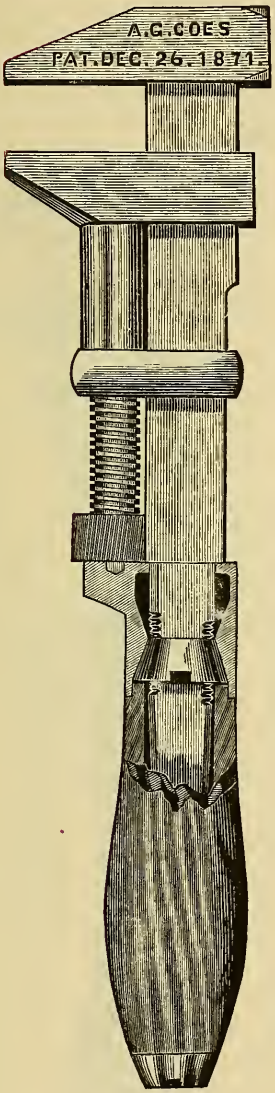
BLACK.

LENGTHS.	PER DOZEN.
6 in.	$9 00
8	10 00
10	12 00
12	14 00
15	24 00
18	30 00
21	36 00

FULL CASES.

Lengths	6	8	10	12	15	18	21	in.
Number in Case	6	6	6	6	3	2	1	dozen.

SCREW WRENCHES.



A. G. Coes' Patent.

BRIGHT.

LENGTHS.	PER DOZEN.
6 in.	$10 00
8	11 00
10	14 00
12	16 00
15	26 00
18	32 00
21	38 00

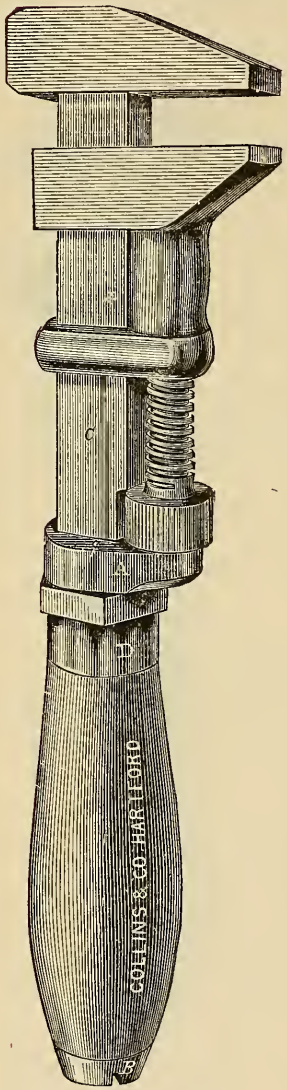
BLACK.

LENGTHS.	PER DOZEN.
6 in.	$9 00
8	10 00
10	12 00
12	14 00
15	24 00
18	30 00
21	36 00

FULL CASES.

Lengths	6	8	10	12	15	18	21	in.
Number in Case	6	6	6	6	3	2	1	dozen.

SCREW WRENCHES.



Collins' Patent.

BRIGHT.

LENGTHS.	PER DOZEN.
6 in.	$10 00
8	11 00
10	14 00
12	16 00
15	25 00
18	31 00
21	37 00

BLACK.

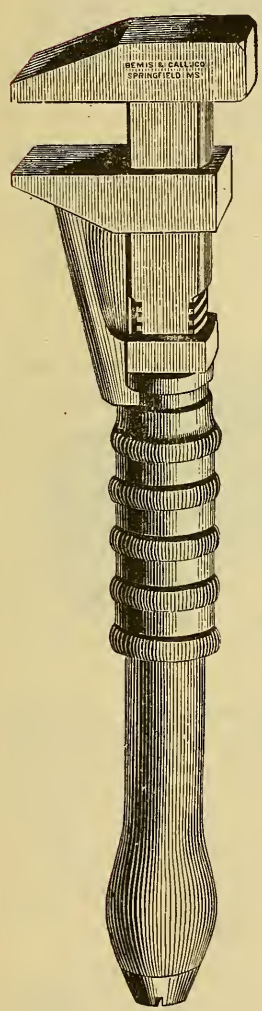
LENGTHS.	PER DOZEN.
6 in.	$9 00
8	10 00
10	12 00
12	14 00
15	23 00
18	29 00
21	35 00

FULL CASES.

Lengths	6	8	10	12	15	18	21	in.
Number in Case	6	6	6	6	3	2	1	dozen.

SCREW WRENCHES.

WARRANTED STEEL FACE AND HEAD.



A. D. Briggs' Pattern.

BRIGHT.

With Long Nut or Sleeve.

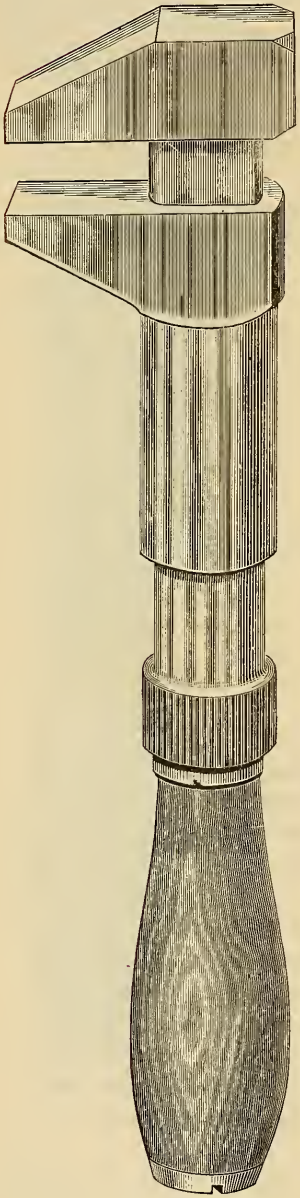
LENGTHS.	PER DOZEN.
10 in.	$17 50
12	20 00
15	32 50

With Short Nut.

LENGTH.	PER DOZEN.
8 in.	$13 75
18	40 00

This Wrench has many advantages over any other Wrench made, by the addition of the long Nut or Sleeve, whereby more power is obtained in the Jaw, which is found to be very essential in screwing up and unscrewing square and six-square nuts, after the corners are worn off. For out-of-doors work in cold weather, it can be adjusted with glove or mitten to a much better advantage than any other Wrench. Also, this long Nut or Sleeve protects and prevents the screw from getting damaged. These Wrenches are made from the best of Wrought Iron, with Steel Face and Head, and case-hardened throughout.

SCREW WRENCHES.



Hewit Patent.

BRIGHT.

LENGTHS.	PER DOZEN.
10 in.	$21 00
12	24 00
15	33 00

BLACK.

LENGTHS.	PER DOZEN.
10 in.	$18 00
12	21 00
15	30 00

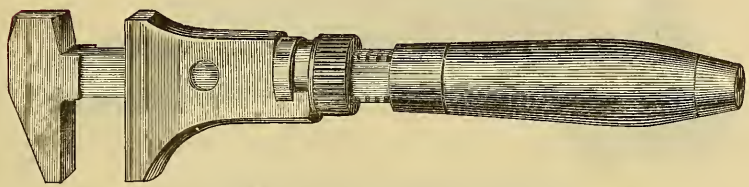
This Wrench has been gotten up for a first class article, being void of all defects in construction, with its working parts so completely covered as not to be liable to clog with dirt or to be injured by abrasion. Where the Shank Jaw joins the Hammer Jaw it is filleted, and is not liable to bend or fracture, while the Shank Bar, having a greater width than other Wrenches of same sizes, amply increases its strength.

This Wrench is manufactured from the most refined material, and finished equal to the best United States gun work, making it very durable and strong.

FULL CASES.

Lengths	10	12	15	in.
Number in Case	6	6	4	dozen.

SCREW WRENCHES.

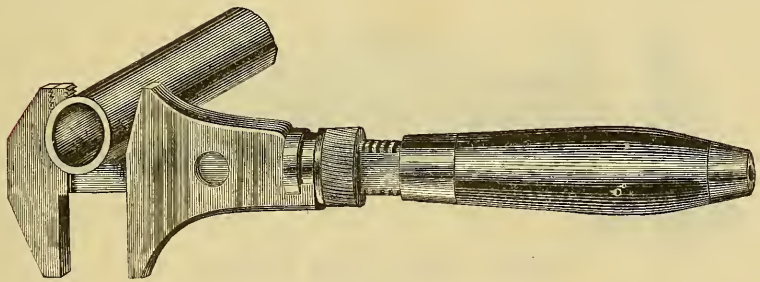


Davis' Solid Cast Steel Bar Railroad Wrench.

18 in. Blue or Bright ..... $26 00 per dozen.

Made of cast steel and warranted four times stronger than any Wrench of same size made of iron.

Packed in Cases of 3 Doz. each.



Davis' Patent Duplex Wrench.

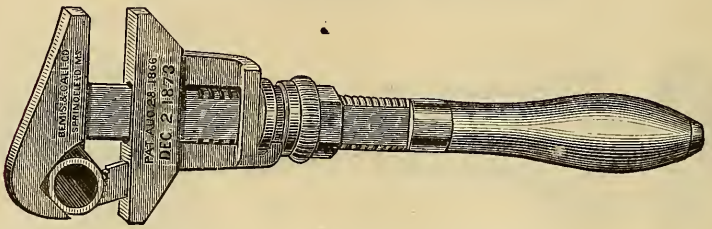
8 in.	$30 00	per dozen.
12	36 00	"
15	48 00	"
18	60 00	"
Reversible Steel Jaws	4 00	"

Above Wrench is made of the best material, and suitable for pipes and cylindrical bodies as well as nuts of all shapes.

FULL CASES.

Lengths	12	15	in.
Number in Case	6	3	dozen.

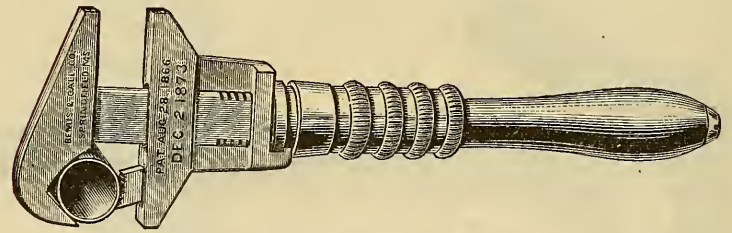
SCREW WRENCHES.



Patent Combination Wrench.

With Short Nut.

10 in., Bright	$23 00	per dozen.
12 "	26 00	"
15 "	37 00	"



Patent Combination Wrench.

With Long Nut.

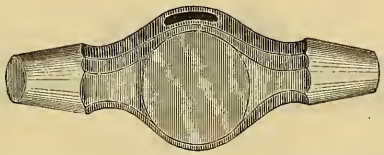
10 in., Bright	$25 25	per dozen.
12 "	28 50	"
15 "	40 50	"

They are made from the best of Wrought Iron, with Steel Head and Jaw, case-hardened throughout.

Patents dated August 28, 1866, and December 2, 1873.

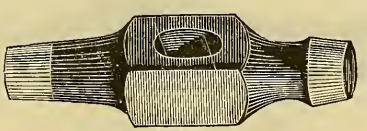
These Wrenches not only combine all of the superior qualities of a Cylinder or Gas Pipe Wrench, but also all the requisite combinations of a regular Nut Wrench, thus making a combination which has no equal.

BOILER MAKER'S HAMMERS.



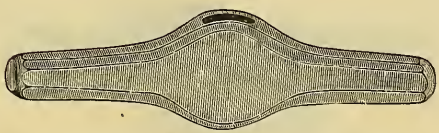
No. 1. Riveting Hammer.

Chrome Cast Steel, solid, 2 to 5 pounds ..... 75 cents per pound.
American " " 2 " 5 " ..... 75 " "



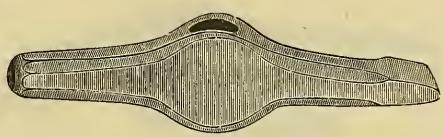
No. 2. Riveting Hammer.

Chrome Cast Steel, solid, 2 to 5 pounds ..... 75 cents per pound.
American " " 2 " 5 " ..... 75 " "



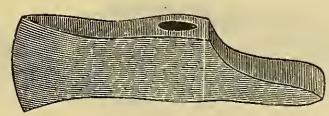
No. 3. Riveting Hammer.

Chrome Cast Steel, solid, 2 to 5 pounds ..... 75 cents per pound.
American " " 2 " 5 " ..... 75 " "



No. 4. Riveting Hammer.

Chrome Cast Steel, solid, 2 to 5 pounds ..... 75 cents per pound.
American " " 2 " 5 " ..... 75 " "



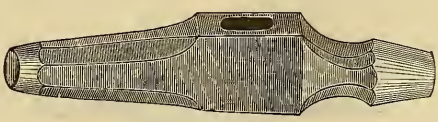
No. 5. Scaling Hammer.

Chrome Cast Steel, solid, 2 to 5 pounds ..... 75 cents per pound.
American " " 2 " 5 " ..... 75 " "

BOILER MAKER'S HAMMERS.

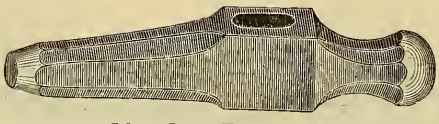
No. 6. Riveting.

Chrome Cast Steel, solid, 2 to 5 pounds ..... 75 cents per pound.
American " " 2 " 5 " ..... 75 " "



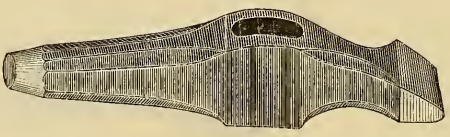
No. 7. Riveting.

Chrome Cast Steel, solid, 2 to 5 pounds ..... 75 cents per pound.
American " " 2 " 5 " ..... 75 " "



No. 8. Riveting.

Chrome Cast Steel, solid, 2 to 5 pounds ..... 75 cents per pound.
American " " 2 " 5 " ..... 75 " "



No. 9. Riveting.

Chrome Cast Steel, solid, 2 to 5 pounds ..... 75 cents per pound.
American " " 2 " 5 " ..... 75 " "

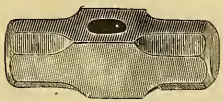
No. 10. Riveting.

Chrome Cast Steel, solid, 2 to 5 pounds ..... 75 cents per pound.
American " " 2 " 5 " ..... 75 " "

HAMMERS.

Hand.

Nos.	0	1	2	3	4	5	
Weight	1¾	2	2¾	3½	4	5	pounds each.
Chrome Cast Steel, solid						50	cents per pound.
American " "						50	" "
Steel Face and Pane						25	" "

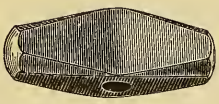


Double Face Hand.

Nos.	1	2	3	4		
Weight	2½	2¾	3¾	4¼	pounds each.	
Chrome Cast Steel, solid					50	cents per pound.
American " "					50	" "
Extra Steel Faced					25	" "

Drilling.

Chrome Cast Steel, solid, 2 to 6 pounds				50	cents per pound.
American " " 2 " 6 "				50	" "
Extra Steel Faced, 2 " 6 "				25	" "



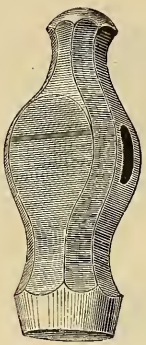
Napping.

Chrome Cast Steel, solid, 2 to 5 pounds				50	cents per pound.
American " " 2 " 5 "				50	" "

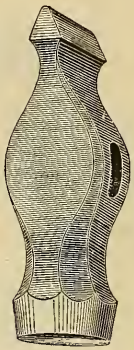
Boat Maul.

Chrome Cast Steel, solid, 6 to 10 pounds				50	cents per pound.
American " " 6 " 10 "				50	" "
Extra Steel Faced, 6 " 10 "				25	" "

MACHINIST'S HAMMERS.



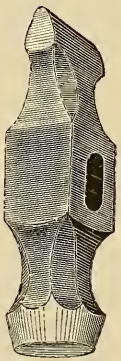
No. 1. Ball Pane.



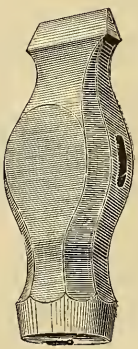
No. 2. Cross Pane.

Nos.	1	2	3	4	5	6	7	8	9	10	
Weight	1	1¼	1½	1¾	2	2¼	2½	3	3½	4	pounds each.

Solid Cast Steel, English	$1 00	per pound.
" " " Chrome	75	"
" " " American	75	"



No. 3. Cross Pane.

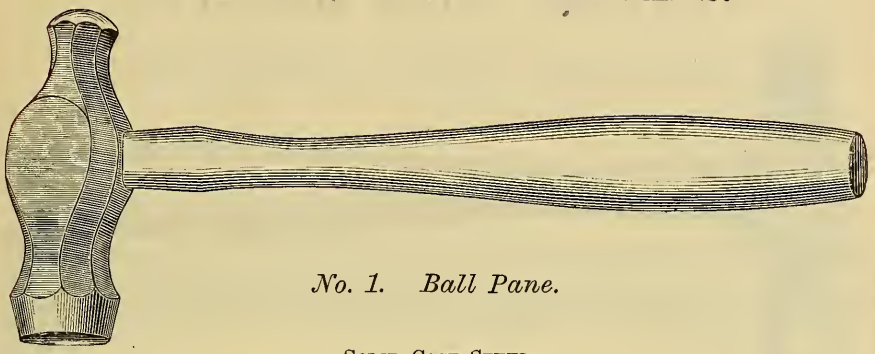


No. 4. Straight Pane.

Nos.	1	2	3	4	5	6	7	8	9	10	
Weight	1	1¼	1½	1¾	2	2¼	2½	3	3½	4	pounds each.

Solid Cast Steel, English	$1 00	per pound.
" " Chrome	75	"
" " American	75	"

HAMMERS WITH HANDLES.

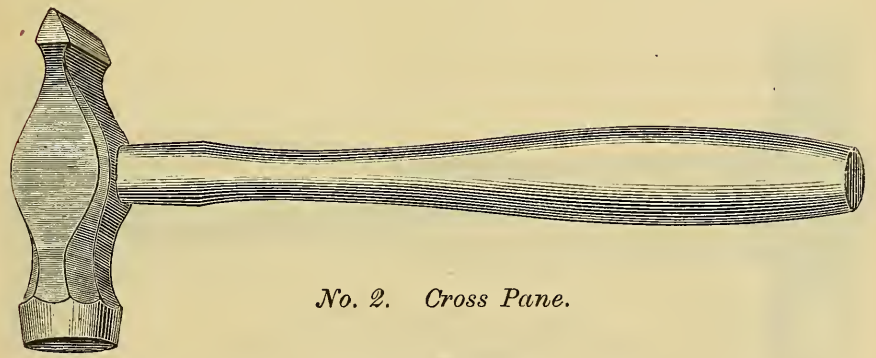


No. 1. Ball Pane.

SOLID CAST STEEL.

Nos.	1	2	3	4	5	
Weight	1	1¼	1½	1¾	2	pounds each.
Price	$13 00	14 00	16 00	18 00	20 00	per dozen.

Nos.	6	7	8	9	10	
Weight	2¼	2½	3	3½	4	pounds each.
Price	$22 00	24 00	28 00	32 00	36 00	per dozen.



No. 2. Cross Pane.

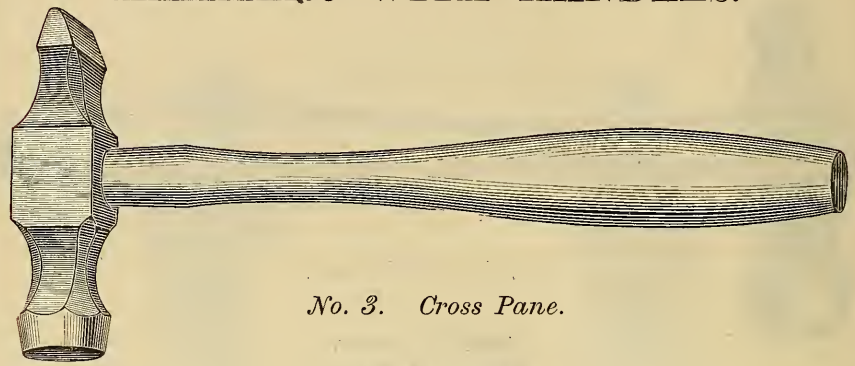
SOLID CAST STEEL.

Nos.	1	2	3	4	5	
Weight	1	1¼	1½	1¾	2	pounds each.
Price	$13 00	14 00	16 00	18 00	20 00	per dozen.

Nos.	6	7	8	9	10	
Weight	2¼	2½	3	3½	4	pounds each.
Price	$22 00	24 00	28 00	32 00	36 00	per dozen.

Weights on above do not include the handles.

HAMMERS WITH HANDLES.

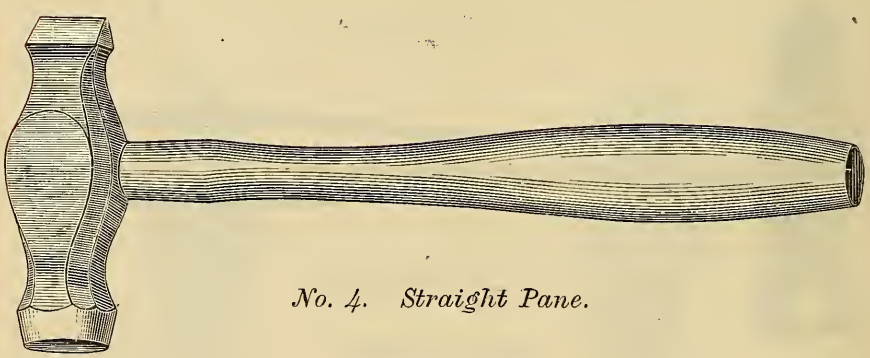


No. 3. Cross Pane.

SOLID CAST STEEL.

Nos.	1	2	3	4	5	
Weight	1	1¼	1½	1¾	2	pounds each.
Price	$13 00	14 00	16 00	18 00	20 00	per dozen.

Nos.	6	7	8	9	10	
Weight	2¼	2½	3	3½	4	pounds each.
Price	$22 00	24 00	28 00	32 00	36 00	per dozen.



No. 4. Straight Pane.

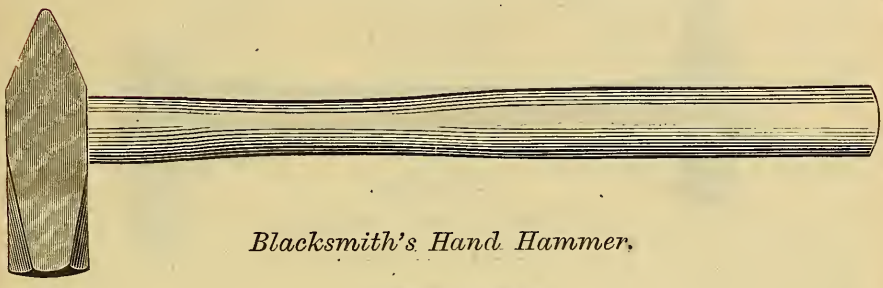
SOLID CAST STEEL.

Nos.	1	2	3	4	5	
Weight	1	1¼	1½	1¾	2	pounds each.
Price	$13 00	14 00	16 00	18 00	20 00	per dozen.

Nos.	6	7	8	9	10	
Weight	2¼	2½	3	3½	4	pounds each.
Price	$22 00	24 00	28 00	32 00	36 00	per dozen.

Weights on above do not include the handles.

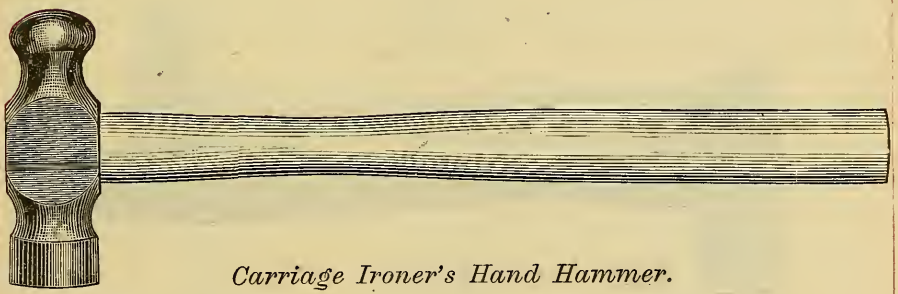
HAMMERS WITH HANDLES.



Blacksmith's Hand Hammer.

SOLID CAST STEEL.

Nos	0	1	2	3	4	5	
Weight	1¾	2¼	2¾	3½	4	5	pounds each.
Price	$8 50	10 50	13 50	15 50	18 00	21 00	per dozen.



Carriage Ironer's Hand Hammer.

SOLID CAST STEEL.

Nos	1	2	
Weight	2¾	2⅜	pounds each.
Price	$22 00	20 00	per dozen.

Weights on above do not include the handles.

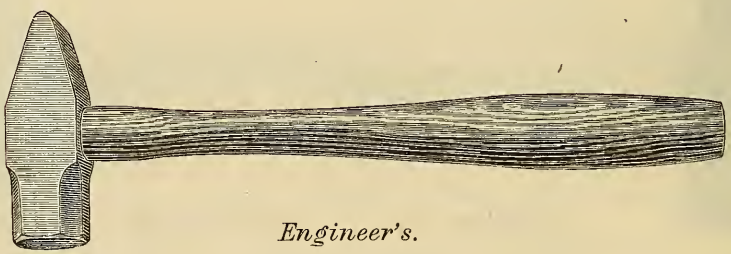
HAMMERS WITH HANDLES.

Riveting.

SOLID CAST STEEL.

Nos.	0	1	2	3	4	5	
Weight	6	9	12 oz.	1	1¼	1½	pounds each.
Price	$4 00	4 75	5 50	6 50	9 00	10 25	per dozen.

Nos.	6	7	8	9	10	
Weight	1¾	2	2½	3	3½	pounds each.
Price	$11 25	13 50	16 50	18 75	21 75	per dozen.



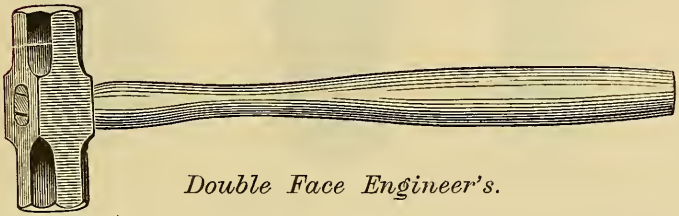
Engineer's.

SOLID CAST STEEL.

Nos.	0	1	2	3	4	5	
Weight	1⅝	2	2⅝	3½	4	5	pounds each.
Price	$8 50	10 50	13 50	15 50	18 00	21 00	per dozen.

Weights on above do not include the handles.

HAMMERS WITH HANDLES.



Double Face Engineer's.

SOLID CAST STEEL.

Nos.	1	2	3	4	
Weight	2½	2¾	3¾	4¼	pounds each.
Price	$13 50	15 00	18 00	21 50	per dozen.

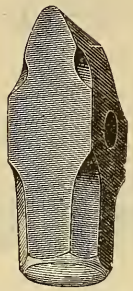
Chipping Hammer.

SOLID CAST STEEL.

Nos.	0	1	2	3	4	
Weight	1¼	1¾	2¼	2¾	3½	pounds each.
Price	$7 50	9 00	11 25	15 00	18 00	per dozen.

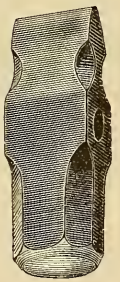
Weights on above do not include the handles.

BLACKSMITH'S TOOLS.



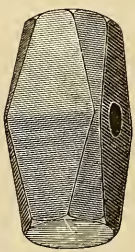
Cross Pane Sledge.

Steel Face and Pane, 5 to 25 pounds	20 cents per pound.
Sold Cast Steel, 5 " 25 "	40 " "



Straight Pane Sledge.

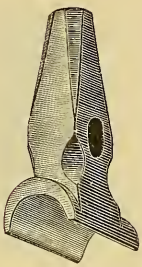
Steel Face and Pane, 5 to 25 pounds	20 cents per pound.
Solid Cast Steel, 5 " 25 "	40 " "



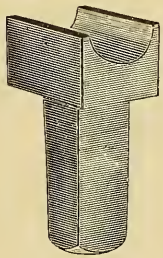
Double Face Striking Sledge.

Steel Face, 6 to 25 pounds	20 cents per pound.
Solid Cast Steel, 6 " 25 "	40 " "

BLACKSMITH'S TOOLS.



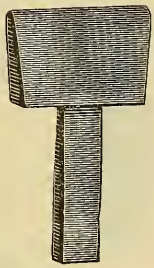
Top Swage.



Bottom Swage.

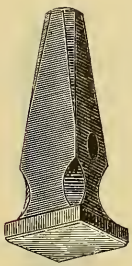
Solid Cast Steel, all sizes ..... 50 cents per pound.

Top Fuller.



Bottom Fuller.

Solid Cast Steel, all sizes ..... 50 cents per pound.



Square Flatter.

SIZES.

2¼, 2½, 2¾ and 3 in. face.

Round Flatter.

SIZES.

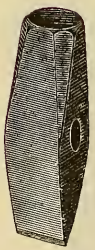
2¼, 2½, 2¾ and 3 in. face.

Solid Cast Steel, all sizes ..... 50 cents per pound.

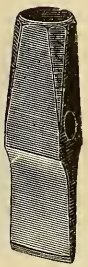
BLACKSMITH'S TOOLS.

Set Hammer.

Solid Cast Steel, all sizes ..... 50 cents per pound.



Cold Cutter.



Hot Cutter.

Solid Cast Steel, all sizes ..... 50 cents per pound.

No. 1.

No. 2.

Cupping Tools.

Solid Cast Steel, all sizes ..... 50 cents per pound.

BLACKSMITH'S TOOLS.

No. 1.

No. 2.

No. 3.

Anvil Hardies.

Solid Cast Steel ..... 50 cents per pound.

Gouge Chisel.

Solid Cast Steel ..... 50 cents per pound.

Cold Chisel.

Solid Cast Steel, assorted sizes ..... 50 cents per pound.

Square Eye.

Round Eye.

Heading Tools.

Solid Cast Steel, all sizes ..... 50 cents per pound.

Countersink.

Solid Cast Steel ..... 50 cents per pound.

BLACKSMITH'S TOOLS.

Top.

Bottom.

Collar Swedges.

Solid Cast Steel ..... 75 cents per pound.

Centre Punch.

V-*Tool.*

Solid Cast Steel Centre Punch ..... $0 75 per pound.
V-Tool, Solid Cast Steel..... 3 00 each.

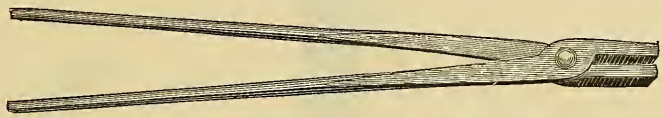
Bending Tools.

For Anvil, Solid Cast Steel..... $4 00 each.
With Arm, " " ..... 3 00 "

Round Punch.

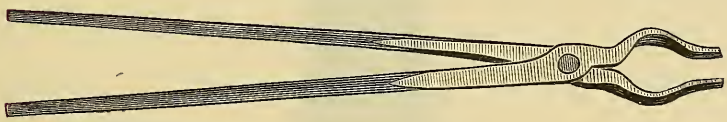
Solid Cast Steel, assorted sizes..... 50 cents per pound.

BLACKSMITH'S TOOLS.



Straight Lipped Tongs.

All lengths ..... 25 cents per pound.



Curved Lipped Tongs.

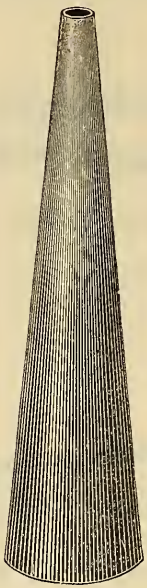
All lengths ..... 25 cents per pound.

Stearns' Patent Swivel Jaw Tongs.

No. 1. 16 in. long ..... $18 00 per dozen.
2. 18 " ..... 21 00 "

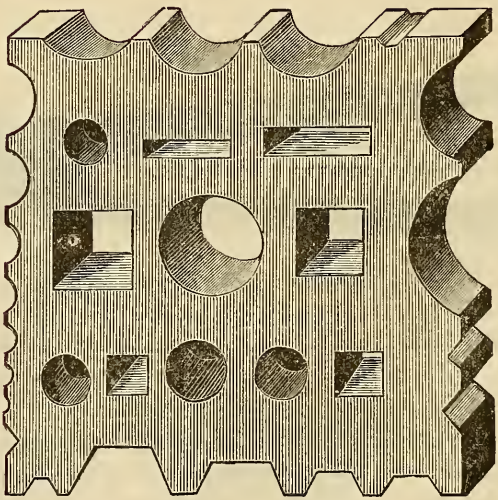
Above Tongs are for holding irregular and tapered pieces of iron or steel. They are made of solid steel. The Swivel Jaw swings so as to take any taper or parallel piece within the capacity of the Tongs. They are a very useful article, and recommend themselves to any mechanic working at the forge.

BLACKSMITH'S TOOLS.



Cone Block.

14 in. Base, 2 in. Top—our own pattern ..... $12 00 each.



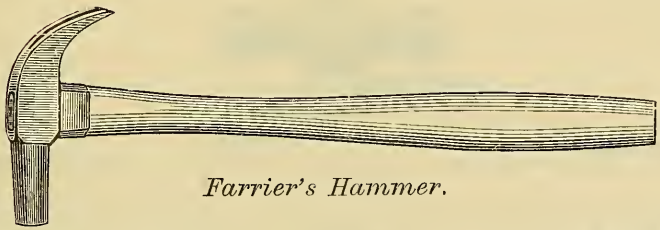
Swage Block.

Made of best iron ..... 6 cents per pound.

FARRIER'S TOOLS.

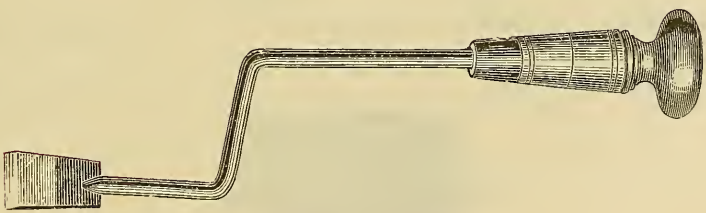
Farrier's Hammer.

Adze Eye, Boston Pattern ..... $10 00 per dozen.



Farrier's Hammer.

Adze Eye, round pole, ordinary pattern ..... $7 00 per dozen.
" " octagon " " " ..... 7 00 "



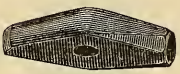
Farrier's Butteris.

Cast Steel Head ..... $12 00 per dozen.

FARRIER'S TOOLS.

Turning Hammer.

Solid Cast Steel, half polished, 2 to 3 pounds ..... $30 00 per dozen.
" " " full " 2 to 3 " ..... 36 00 "

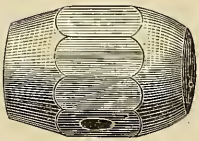


Creasing Hammer.

Solid Cast Steel ..... 50 cents per pound.

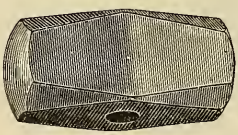
Nail Pointing Hammer.

Solid Cast Steel ..... 50 cents per pound.



New Pattern Turning Sledge.

Solid Cast Steel, 7 to 9 pounds ..... 40 cents per pound.



Old Pattern Turning Sledge.

Solid Cast Steel, 7 to 9 pounds ..... 40 cents per pound.

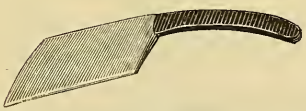
FARRIER'S TOOLS.

Nail Pointing Anvil.

Solid Cast Steel ..... $18 00 per dozen.

Farrier's Knife.

Wostenholm I X L ..... $6 00 per dozen.



Toe Knife.

Solid Cast Steel ..... 75 cents each.

Buffer.

Solid Cast Steel ..... 75 cents each.

Pritchell.

Solid Cast Steel ..... 50 cents per pound.

FARRIER'S TOOLS.

Farrier's Shoeing Pincers.

WROUGHT IRON, WITH STEEL JAWS.

10 in., japanned	$10 00	per dozen.
12 "	12 00	"
14 "	14 00	"
Solid Steel, all lengths	30 00	"

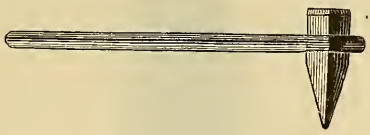
Farrier's Tongs.

All lengths, straight lipped ..... 25 cents per pound.

Farrier's Tongs.

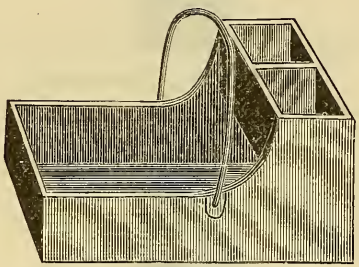
All lengths, curved lipped ..... 25 cents per pound.

FARRIER'S TOOLS.



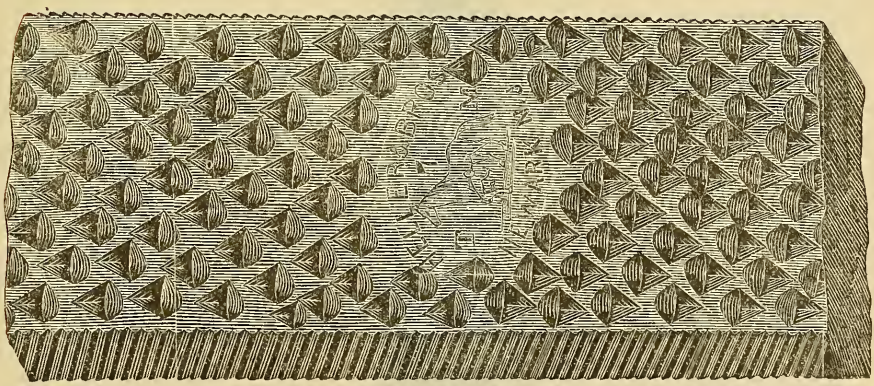
Stamp Punch.

Solid Steel Punch ..... $18 00 per dozen.



Farrier's Box.

Ordinary size, of wood, iron Bail ..... $4 00 each.
Farrier's and Blacksmith's Leather Aprons ..... 15 00 per dozen

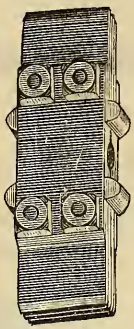


Heller Horse Rasp.

Lengths	14	15	16	in.
Price	$15 00	18 00	21 50	per dozen.

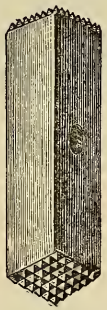
Above illustration is a *fac simile* of the genuine Heller Rasp and trade mark.

STONE MASON'S TOOLS.



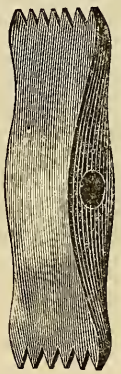
Patent Bush Hammer.

From 4 to 12 plates of best Steel ..... $9 00 each.



Ordinary Bush Hammer.

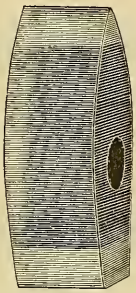
Solid Cast Steel, all sizes ..... 75 cents per pound.



Tooth or Bush Axe.

Solid Cast Steel, all sizes ..... 75 cents per pound.

STONE MASON'S TOOLS.

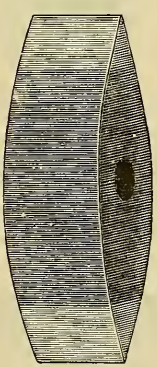


Face and Pane Stone Hammer.

Steel Face and Pane,	under 6 pounds	25 cents per pound.	
" " "	over 6 "	20 " "	
Solid Cast Steel,	under 6 "	50 " "	
" " "	over 6 "	40 " "	

Double Face Stone Hammer.

Solid Cast Steel,	under 6 pounds	50 cents per pound.	
" " "	over 6 "	40 " "	



Stone Axe.

Solid Cast Steel	40 cents per pound.

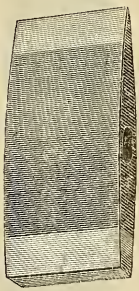
STONE MASON'S TOOLS.

Stone Cutter's Hand Hammer.

Solid Cast Steel, 2 to 5 pounds ..... 50 cents per pound.

Stone Cutter's Flagging Hammer.

Solid Cast Steel, 3 to 5 pounds ..... 50 cents per pound.



Mason's Hand Hammer.

Nos	1	2	3	4	5	6	7	8	9	10	
Weights	3	3½	4	4½	5	5½	6	7	8	9	pounds.

Steel Face and Pane ..... 25 cents per pound.
Solid Cast Steel ..... 50 " "

Stone Axe and Pane Hammer Shapes.

Solid Cast Steel, forged from the bar ..... 25 cents per pound.

STONE MASON'S TOOLS.

Cape Chisel.

Solid Cast Steel..... 50 cents per pound.

Narrow Chisel.

Solid Cast Steel..... 50 cents per pound.

Pitching Tool.

Solid Cast Steel..... 50 cents per pound.

Hammer Head.

Mallet Head.

Tooth Chisels.

Solid Cast Steel..... 50 cents per pound.

Hammer Head.

Mallet Head.

Plain Chisels.

Solid Cast Steel..... 50 cents per pound.

Hammer Head.

Mallet Head.

Flat Point Chisels.

Solid Cast Steel..... 50 cents per pound.

Hammer Head.

Mallet Head.

Prick Point Chisels.

Solid Cast Steel..... 50 cents per pound.

STONE MASON'S TOOLS.

Pinch Bar.

Solid Cast Steel, 24 in. long ..... 35 cents per pound.

Pinch Bar.

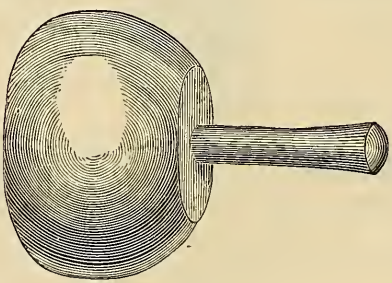
Steel Point ..... 8 cents per pound.
Solid Steel ..... 12 " "

Pinch Bar with Heel.

Steel Point ..... 8 cents per pound.
Solid Steel ..... 15 " "

Mill Pick—Solid Steel.

Solid Cast Steel ..... 75 cents per pound.



Stone Cutter's Mallet.

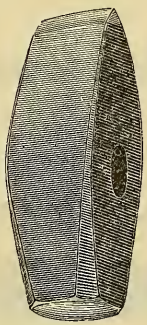
Head 5½ in. diameter, 3½ in. long ..... $10 00 per dozen.
" 7 " 4½ " ..... 12 50 "
" 8½ " 5½ " ..... 15 00 "

Second Growth from Hickory Butts.

QUARRY TOOLS.

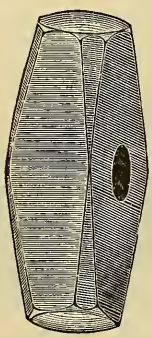
Chipping Hammer.

Steel Face and Pane,	2 to 5 pounds	25 cents per pound.
" " "	over 5 "	20 " "
Solid Cast Steel,	2 to 5 "	50 " "
" "	over 5 "	40 " "



Stone Sledge.

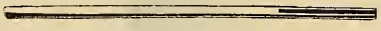
Steel Face and Pane,	5 to 30 pounds	20 cents per pound.
Solid Cast Steel,	5 " 30 "	40 " "



Double Face Stone Sledge.

Solid Cast Steel, 6 to 30 pounds ..... 40 cents per pound.

QUARRY TOOLS.



Tamping Bar.

Solid Steel ..... $1 00 to $3 00 each.

Stone Crowbar.

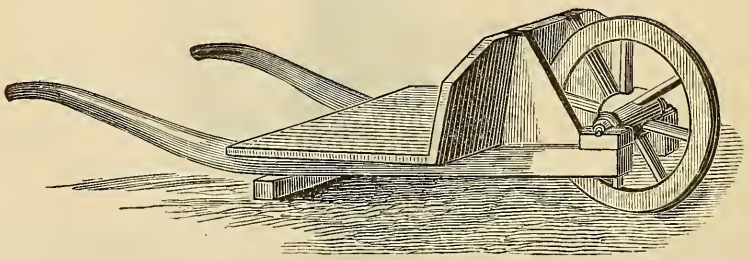
Steel Pointed ..... 8 cents per pound.
Solid Steel ..... 12 " "

Churn Drill.

Solid Steel Points, all sizes ..... 30 cents per pound.

Stone Pick.

Common Finish, 6 to 9 pounds ..... $14 00 per dozen.
Axe " 6 " 9 " ..... 15 00 "



Stone Barrow.

Price, each $8 00

MINER'S TOOLS.

Plug and Feathers.

Solid Cast Steel ..... $3 00 per dozen.

No. 1.

Socket Drills. *No. 2.*

Solid Cast Steel ..... 40 cents per pound.

Jumper Drill.

Solid Steel Point ..... 25 cents per pound.

Feather Drill.

Solid Steel Points ..... 25 cents per pound.

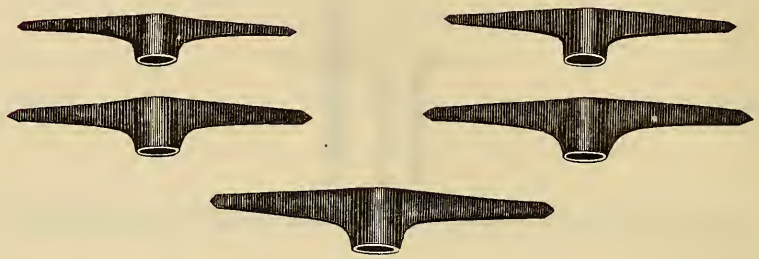
Needle.

Solid Cast Steel ..... Special price.

Spoon.

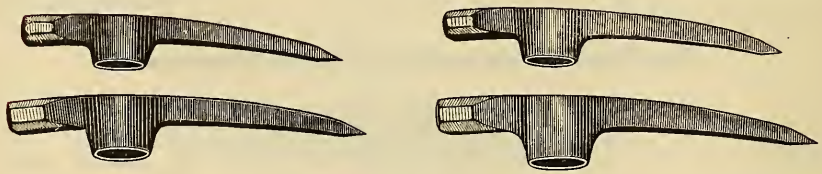
Solid Steel Spoon, wrought handle ..... Special price.

COAL MINER'S TOOLS.



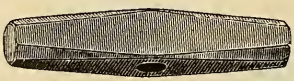
Coal Picks.

NOS.	WEIGHT.	LENGTH.	PER DOZEN.
0	2½ pounds	16½ in.	$8 50
1	2½ "	17½	9 00
2	3 "	18	10 00
3	4 "	20	11 00
4	5 "	21	13 00



Coal Poll Picks.

Nos.	1	2	3	4	5	6	
Price	$17 00	17 00	17 00	18 00	20 00	24 00	per dozen.



Coal Sledge.

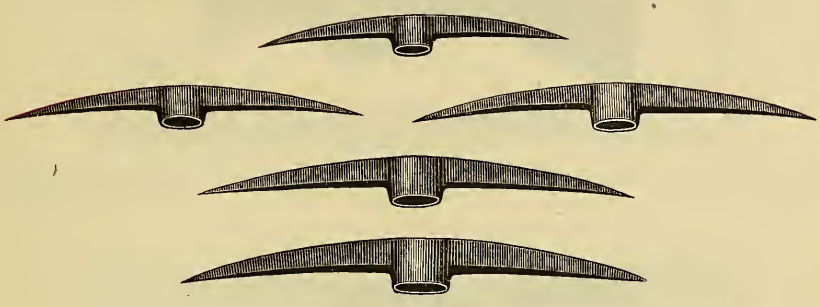
Solid Steel ..... 40 cents per pound.

Coal Wedge.

Solid Steel ..... 40 cents per pound.

DRIFTING PICKS,

For Gold and Silver Miners.

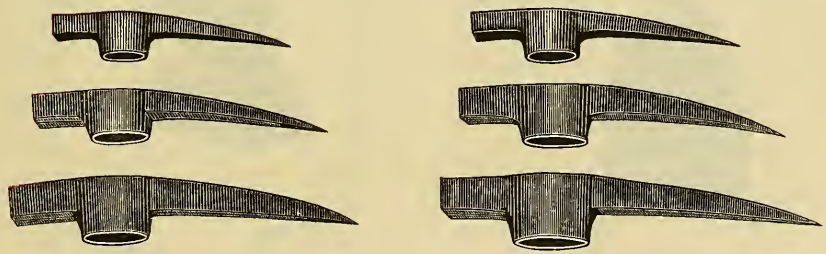


PRICE LIST.

NOS.	WEIGHT.	LENGTH.	PER DOZEN.
1	3 pounds	17 in.	$15 00
2	4 "	19	15 00
3	4½ "	21	15 00
4	5 "	23	16 00
5	6 "	24	18 00

POLL PICKS,

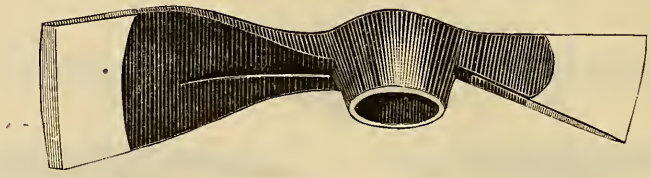
For Prospectors of Mines.



PRICE LIST.

NOS.	WEIGHT.	LENGTH.	PER DOZEN.
1	3¼ pounds	13½ in.	$17 00
2	4 "	14	17 00
3	4½ "	15	17 00
4	5¼ "	17	18 00
5	6 "	18	20 00
6	6¾ "	21¾	24 00

MATTOCKS, GRUB HOE AND ADZE.



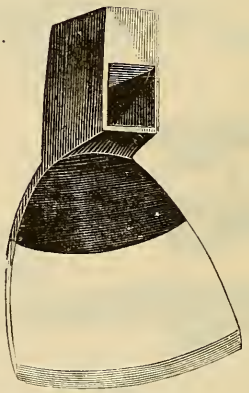
Short Cutter Mattock.

Axe Finish ..... $13 50 per dozen.

Long Cutter Mattock.

Axe Finish ..... $15 00 per dozen.

Grub Hoe.



Railway Adze.

No. 0.	Grub Hoe, Axe Finish	$9 50 per dozen.
1.	" " " "	10 00 "
2.	" " " "	10 50 "
3.	" " " "	12 00 "
Railway Adze,	" "	24 00 "

CHAINS.

Twist Link.

Straight Link.

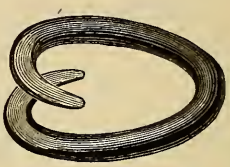
Diameter.	W'T PER FATHOM.		PROOF TONS.		PRICE PER POUND.		
	Close Link.	Stud Link.	Cable.	Crane.	Close Link.	Stud Link.	Best Crane.
	POUNDS.		TON.		CENTS.	CENTS.	CENTS.
3/16	3.5	----	1/2	----	17	----	----
1/4	5.5	----	3/4	----	13	----	----
5/16	6.25	----	1	----	12	----	----
3/8	9.5	----	2	3	11	----	----
7/16	13.5	----	3	4	10 1/4	----	----
1/2	17	----	4	5	9 1/2	----	----
9/16	21	----	5	6	9 1/4	----	----
5/8	26	----	6	8	9	----	----
11/16	30	----	8	10	9	----	----
3/4	37	34	10	12	8 3/4	----	----
13/16	42	40	12	14	8 3/4	----	----
7/8	48	44	14	16	8 1/2	----	----
15/16	55	51	16	18	8 1/2	----	----
1	63	59	18	22	8 1/4	----	----
1 1/16	70	66	23	28	8	----	----
1 1/8	79	75	28	34	7 3/4	----	----
1 3/16	88	82	----	----	----	----	----
1 1/4	98	91	----	----	----	----	----
1 3/8	118	113	----	----	----	----	----
1 1/2	----	132	----	----	----	----	----
1 5/8	----	156	----	----	----	----	----
1 3/4	----	175	----	----	----	----	----
1 7/8	----	205	----	----	----	----	----
2	----	240	----	----	----	----	----

Chains for cranes should be made of oval links short, and should not exceed one inch in diameter. A crane-chain will stretch under a proof of fifteen tons half an inch to a fathom.

Close Link Chain is heavier than Stud Link.

WROUGHT CHAIN LINKS,

OR COLD SHUTS.



Sizes	3/16	1/4	5/16	3/8	1/2	9/16	5/8 in.
Price	24	21	19	17	14½	13½	13 cents per pound.

Can furnish any size desired.

DETACHABLE BELT,

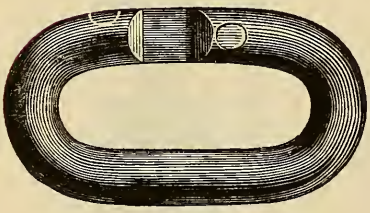
OR TRANSMITTING CHAIN.

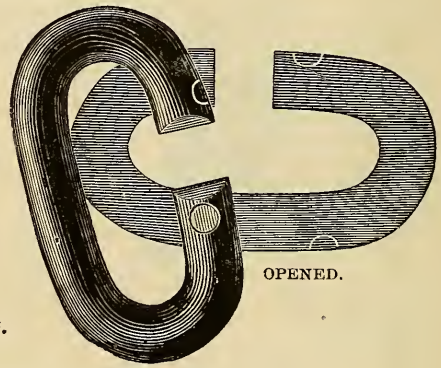
Sizes	3/16	1/4	3/8	1/2	5/8	3/4	7/8	1	1⅛	1¼ in.
Wt. per Link	11/16	1½	2½	3	6¾	11oz.	1lb.2oz.	1lb.7½oz.	2lb.3½oz.	3lb.
Links to Ft.	11½	9½	7½	7	5	4½	3½	2¾	2¼	2
Price	20	17	15	15	14	14	14	14	14	14 cts. per pound.

In ordering state the kind as well as the sizes desired.

UNIVERSAL CHAIN LINKS.

MALLEABLE IRON.


CLOSED.


OPENED.

Ingall's Patent.

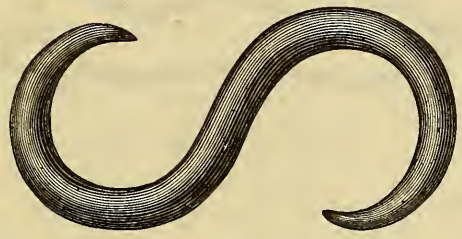
Log or Draught Chain Links.

Size	3/16	1/4	3/8	1/2	5/8	¾ in.
Weight per Link	15/16	2 3/16	3 5/8	4½	9½	14½ ounces each.
Links to Foot	11	8	6	6	4	4
Price	21	18	15½	15	15	15 cents per pound.

Cable or Short Links.

Size	3/16	1/4	3/8	1/2	5/8	¾	7/8	1	1⅛	1¼ in.
Weight per Link	13/16	2	3	4	7½	13oz.	1 5/16	1¾	2 9/16	3 5/16 pounds each.
Links to Foot	14	11	8	8	6½	5	4	3½	3	2½
Price	21	19	16	16	16	15½	15½	15	15	15 cents per pound.

WROUGHT S HOOKS.



Sizes	3/16	1/4	5/16	3/8	7/16	1/2	in.
Price	24	21	19	17	15½	14½	cents per pound.

LOG OR BINDING CHAINS.

With Grab Hook and Swivel.

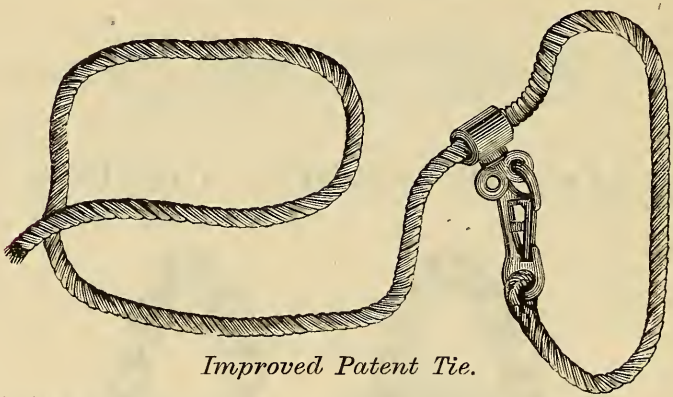
Sizes	1/4	5/16	3/8	7/16	1/2	9/16	in.
Price	18	15	14	13	12	12	cents per pound.

Above are made in ten to sixteen feet lengths, with two hooks and one swivel. One hook is of the ordinary pattern; the other is made to adjust itself to any part of the chain, fitting over one link and fastening on to the next, making a very secure fastening and easily applied.

CATTLE TIES.

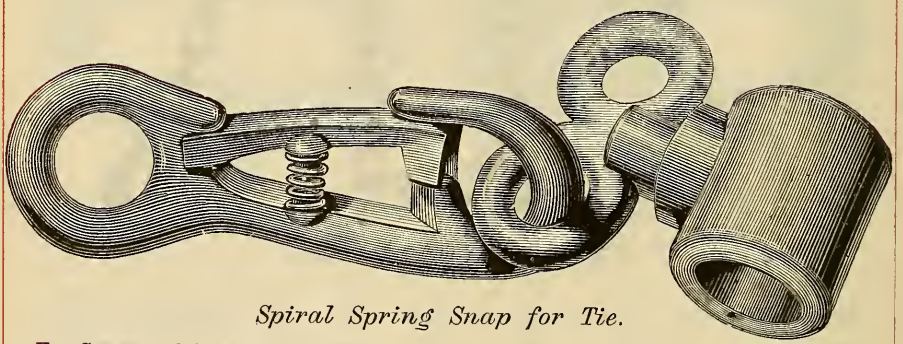
American Cattle Tie.

Price	$12 00 per dozen.
English Cattle Tie	4 00 "



Improved Patent Tie.

Cattle Tie, japanned, with rope	$4 00 per dozen.
" " " without rope, 1 dozen in a box	1 50 "



Spiral Spring Snap for Tie.

For Snaps (only), japanned ..... 75 cents per dozen.

The Tie consists of an iron socket, and secured in any position by means of a thumb-screw in one side of the socket, the thumb-screw having a perforated head, through which the snap is readily hooked. The snap is so constructed that it cannot become unfastened by any accidental means. The spiral spring is made of brass and not liable to rust. This Tie is very desirable and coming rapidly into general use.

WINDOW GLASS.

NUMBER OF LIGHTS PER BOX OF 50 FEET.

INCHES.	NUMBER.	INCHES.	NUMBER.	INCHES.	NUMBER.	INCHES.	NUMBER.
6 × 8	150	12 × 18	33	16 × 44	10	26 × 32	9
7 × 9	115	12 × 20	30	18 × 20	20	26 × 34	8
8 × 10	90	12 × 22	27	18 × 22	18	26 × 36	8
8 × 11	82	12 × 24	25	18 × 24	17	26 × 40	7
8 × 12	75	12 × 26	23	18 × 26	15	26 × 42	7
8 × 13	70	12 × 28	21	18 × 28	14	26 × 44	6
8 × 14	64	12 × 30	20	18 × 30	13	26 × 48	6
8 × 15	60	12 × 32	18	18 × 32	13	26 × 50	6
8 × 16	55	12 × 34	17	18 × 34	12	26 × 54	5
9 × 11	72	13 × 14	40	18 × 36	11	26 × 58	5
9 × 12	67	13 × 16	35	18 × 38	11	28 × 30	9
9 × 13	62	13 × 18	31	18 × 40	10	28 × 32	8
9 × 14	57	13 × 20	28	18 × 44	9	28 × 34	8
9 × 15	53	13 × 22	25	20 × 22	16	28 × 36	7
9 × 16	50	13 × 24	23	20 × 24	15	28 × 38	7
9 × 17	47	13 × 26	21	20 × 26	14	28 × 40	6
9 × 18	44	13 × 28	19	20 × 28	13	28 × 44	6
9 × 20	40	13 × 30	18	20 × 30	12	28 × 46	6
10 × 12	60	14 × 16	32	20 × 32	11	28 × 50	5
10 × 13	55	14 × 18	29	20 × 34	11	28 × 52	5
10 × 14	52	14 × 20	26	20 × 36	10	28 × 56	4
10 × 15	48	14 × 22	23	20 × 38	9	30 × 36	7
10 × 16	45	14 × 24	22	20 × 40	9	30 × 40	6
10 × 17	42	14 × 26	20	20 × 44	8	30 × 42	6
10 × 18	40	14 × 28	18	20 × 46	8	30 × 44	5
10 × 20	36	14 × 30	17	20 × 48	8	30 × 46	5
10 × 22	33	14 × 32	16	20 × 50	7	30 × 48	5
10 × 24	30	14 × 34	15	20 × 60	6	30 × 50	5
10 × 26	28	14 × 36	14	22 × 24	14	30 × 54	4
10 × 28	26	14 × 40	13	22 × 26	13	30 × 56	4
10 × 30	24	14 × 44	11	22 × 28	12	30 × 60	4
10 × 32	22	15 × 18	27	22 × 30	11	32 × 42	5
10 × 34	21	15 × 20	24	22 × 32	10	32 × 44	5
11 × 13	50	15 × 22	22	22 × 34	10	32 × 46	5
11 × 14	47	15 × 24	20	22 × 36	9	32 × 48	5
11 × 15	44	15 × 26	18	22 × 38	9	32 × 50	4
11 × 16	41	15 × 28	17	22 × 40	8	32 × 54	4
11 × 17	39	15 × 30	16	22 × 44	8	32 × 56	4
11 × 18	36	15 × 32	15	22 × 46	7	32 × 60	4
11 × 20	33	16 × 18	25	22 × 50	7	34 × 40	5
11 × 22	30	16 × 20	23	24 × 28	11	34 × 44	5
11 × 24	27	16 × 22	20	24 × 30	10	34 × 46	5
11 × 26	25	16 × 24	19	24 × 32	9	34 × 50	4
11 × 28	23	16 × 26	17	24 × 36	8	34 × 52	4
11 × 30	21	16 × 28	16	24 × 40	8	34 × 56	4
11 × 32	20	16 × 30	15	24 × 44	7	36 × 44	5
11 × 34	19	16 × 32	14	24 × 46	7	36 × 50	4
12 × 14	43	16 × 34	13	24 × 48	6	36 × 56	4
12 × 15	40	16 × 36	12	24 × 50	6	36 × 60	3
12 × 16	38	16 × 38	12	24 × 54	5	36 × 64	3
12 × 17	35	16 × 40	11	24 × 56	5	40 × 60	3

ENGLISH TIN PLATES.

MARKS AND WEIGHTS.

Brand.	Plates per Box.	Length and Breadth.	Net Weight per Box.
	NUMBER.	INCHES.	POUNDS.
1 C or 1 Com.	225	13¾ × 10	112
2 C	225	13¼ × 9¾	105
3 C	225	12¾ × 9½	98
H C	225	13¾ × 10	119
H X	225	13¾ × 10	157
1 X	225	13¾ × 10	140
2 X	225	13¼ × 9¾	133
3 X	225	12¾ × 9½	126
1 XX	225	13¾ × 10	161
1 XXX	225	13¾ × 10	182
1 XXXX	225	13¾ × 10	203
1 XXXXX	225	13¾ × 10	224
1 XXXXXX	225	13¾ × 10	245
DC	100	16¾ × 12½	98
DX	100	16¾ × 12½	126
DXX	100	16¾ × 12½	147
DXXX	100	16¾ × 12½	168
DXXXX	100	16¾ × 12½	189
SDC	200	15 × 11	168
SDX	200	15 × 11	188
SDXX	200	15 × 11	209
SDXXX	200	15 × 11	230
SDXXXX	200	15 × 11	251
SDXXXXX	200	15 × 11	272
SDXXXXXX	200	15 × 11	293
Leaded IC	112	20 × 14	112
Leaded IX	112	20 × 14	140
ICW	225	13¾ × 10	112
IXW	225	13¾ × 10	140
CSDW	200	15 × 11	168
CIIW	100	16¾ × 12½	105
XIIW	100	16¾ × 12½	126
TT	450	13¾ × 10	112
XTT	450	13¾ × 10	126

When the plates are 14 × 20 inches, there are 112 in a box.

GENUINE CHESTER EMERY.

AMES'

TRADE MARK.

Manufactured from Pure Crystals.

PRICES AT FACTORY.

In Kegs of about 250 Pounds.

Grain Emery, Nos. 6, 8, 10, 12, 14, 16, 20, 24, 30, 36, 40, 46, 54, 60, 70, 80, 90, 100, 120, 130 and 150,	7 cents per pound.
Flour Emery, F and FF	4 " "

Subject to freight at "1st class" rates.

PRICES IN CHICAGO FROM STOCK.

In Kegs of about 250 Pounds.

Grain Emery, all sizes, as above	8½ cents per pound.
Flour Emery, F and FF	5½ " "

In Tin Cases of 10 Pounds each; or less than full kegs, 2 cents per pound extra.

The Genuine Chester Emery is considered the best now in use, being made from pure crystals, free from all foreign substances, perfectly graded, and quality always the same. This Emery will not rust when exposed to wet places.

Other leading brands furnished from factory when ordered in full kegs.

FLINT QUARTZ.

Nos. 00, 0, ½, 1, 1½, 2, 2½, 3, 3½ and 4 ..... 4 cents per pound.

Packed in Kegs of about 150 Pounds, and Barrels of about 350 Pounds.

Used for making Sand Belts.

Grades are the *same as Flint Sand Paper.*

GLUE.

Standard Grades kept in Stock.

White — Extra Quality	30 to 40 cents per pound.
Translucent — Best Quality	25 " 35 " "
Brown — Good Quality	20 " 25 " "
Common Sizing Glue	10 " 15 " "

NOTICE.—When ordering Glue, always be particular to state for what purpose it is to be used.

FLINT AND SAND PAPER.

Flint Paper.

No. 00.	5 Reams per Bundle	$4 50	per ream.
0.	5 " "	4 50	"
½.	4 " "	4 50	"
1.	3½ " "	4 50	"
1½.	3 " "	4 50	"
2.	2½ " "	5 00	"
2½.	2 " "	5 00	"
3.	1½ " "	5 00	"
3½.	1 " "	5 00	"
Assorted,	2½ " "	5 00	"
Riverside Flint Paper, all numbers		3 75	"
Star Sand Paper,	"	3 50	"
Diamond Sand Paper,	"	3 00	"

Extra Flint Paper, in Rolls.

No. 00, 0 and ½.	150 feet per Roll,	23½	in. wide	10	cents	per yard.
1 and 1½.	150 " "	23½	"	10	"	"
2.	150 " "	23½	"	11	"	"
2½.	150 " "	23½	"	12	"	"
3.	150 " "	23½	"	13	"	"
3½.	150 " "	23½	"	16	"	"

EMERY PAPER AND EMERY CLOTH.

Emery Paper.

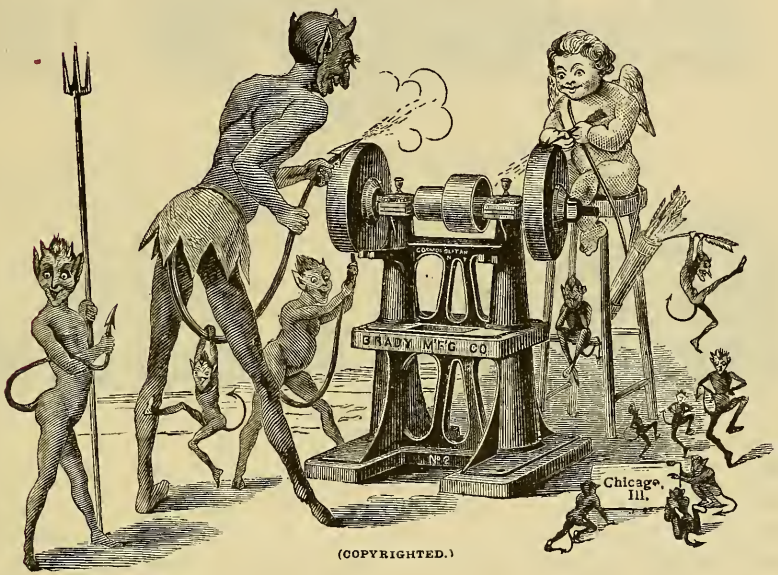
No. 00.	4½ Reams per Bundle	$6 75	per ream.
0.	4 " "	6 75	"
½.	3½ " "	6 75	"
1.	3 " "	6 75	"
1½.	2½ " "	6 75	"
2.	2 " "	7 75	"
2½.	1½ " "	9 75	"
3.	1½ " "	11 75	"

Emery Cloth.

No. 00.	2½ Reams per Bundle	$20 25	cents	per bundle.
0.	2½ " "	20 25	"	"
½.	2 " "	20 25	"	"
1.	1¾ " "	20 25	"	"
1½.	1½ " "	20 25	"	"
2.	1¼ " "	22 25	"	"
2½.	1 " "	26 25	"	"
3.	¾ " "	28 25	"	"

Parties ordering the quantity in a bundle or its duplicates will get the original packages.

EMERY WHEELS.



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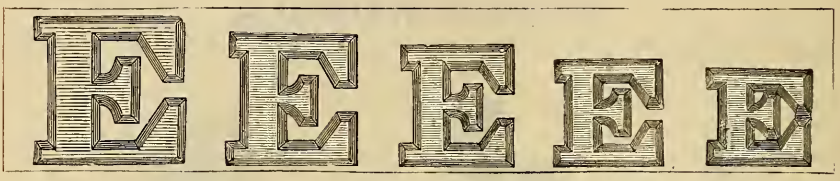
PRICE LIST.

Diameter of Wheels, in Inches.	Thickness of Wheels in Inches.													Revolut'ns per Minute.
	½	⅝	¾	⅞	1	1¼	1½	1¾	2	2¼	2½	2¾	3	
1½	$0 40	$0 42	$0 45	$0 47	$0 50	$0 55	$0 60	$0 65	$0 70	$0 78	$0 85	$0 94	$1 00	10,000
2	45	50	55	57	60	65	70	80	90	95	1 00	1 15	1 25	7,000
2½	62	70	76	82	87	96	1 05	1 15	1 25	1 40	1 50	1 70	1 85	6,000
3	80	89	97	1 07	1 15	1 27	1 40	1 55	1 65	1 85	2 00	2 25	2 40	4,800
3½	95	1 05	1 15	1 25	1 42	1 58	1 80	2 05	2 25	2 60	2 75	3 00	3 25	4,100
4	1 10	1 22	1 35	1 48	1 60	1 90	2 20	2 50	2 80	3 15	3 40	3 75	4 00	3,600
4½	1 25	1 45	1 55	1 70	1 85	2 18	2 60	3 00	3 32	3 75	4 10	4 53	4 65	3,400
5	1 40	1 65	1 75	1 92	2 10	2 45	3 00	3 50	3 85	4 35	4 80	5 30	5 70	3,000
6	1 75	2 09	2 42	2 77	3 10	3 77	4 45	5 10	5 60	6 40	7 00	7 75	8 40	2,400
7	1 90	2 20	2 50	2 80	3 30	4 00	4 70	6 48	7 05	8 07	8 75	9 75	10 45	2,100
8	2 50	3 00	3 50	4 00	4 50	5 50	6 50	7 50	8 50	9 50	10 50	11 50	12 50	1,800
9	2 83	3 38	3 97	4 45	5 12	6 13	7 15	8 36	9 37	10 27	11 62	12 83	14 20	1,600
10	3 15	3 77	4 45	4 90	5 75	6 77	7 80	8 97	10 15	11 45	12 75	13 20	15 10	1,500
12	4 00	4 87	5 75	6 62	7 50	9 25	11 00	12 50	14 00	16 00	17 50	19 50	21 00	1,200
14	.....	.....	9 00	10 12	11 25	13 37	15 50	17 75	19 50	22 00	24 50	26 75	29 50	1,000
15	.....	.....	.....	.....	13 12	15 65	17 50	19 87	22 25	25 25	28 00	30 75	33 50	950
16	.....	.....	.....	.....	14 00	16 75	19 50	22 00	25 00	28 50	31 50	34 75	37 50	900
17	.....	.....	.....	.....	.....	19 12	22 25	25 37	28 50	32 50	35 25	39 62	42 75	850
18	.....	.....	.....	.....	.....	21 50	25 00	28 75	32 00	36 50	40 00	44 50	48 00	800
20	.....	.....	.....	.....	.....	25 00	29 00	34 50	39 00	44 50	49 00	54 00	58 00	700
22	.....	.....	.....	.....	.....	30 50	35 50	41 50	47 00	54 00	59 00	65 00	70 00	650
24	.....	.....	.....	.....	.....	35 50	42 00	49 50	56 00	64 00	70 00	78 00	84 00	600
26	.....	.....	.....	.....	.....	.....	.....	58 00	65 00	74 00	82 00	91 00	98 00	550
30	.....	.....	.....	.....	.....	.....	.....	77 50	87 50	99 00	109 00	120 00	131 00	500
36	.....	.....	.....	.....	.....	.....	.....	110 00	125 00	143 00	156 00	171 00	188 00	400

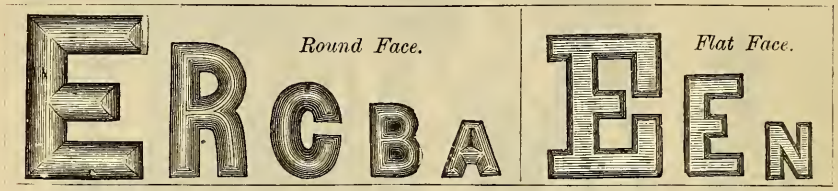
METALLIC

PATTERN LETTERS AND FIGURES.



Roman Style.

Size	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1	1 1/4	1 1/2	2 in.
Price	3	3	3	4	5	5	5	6	6	7	7	8	10	12	15 cents each.



Gothic Style.

Sizes of Round Face			1/4	3/8	1/2	5/8	3/4 in.
Price			3	4	4	5	6 cents each.
Sizes of Flat Face	1/4	5/16	3/8	1/2	5/8	3/4	3/4 in. No. 2.
Price	3	3	4	4	5	6	6 cents each.
Sizes of Sharp Face Gothic			1/4	5/16	3/8	1/2	5/8 in.
Price			3	4	4	4	5 cents each.

Roman Brand-Iron Patterns (Reversed).

Sizes	1/4	3/8	1/2	5/8	3/4 in.
Price	4	5	6	7	8 cents each.

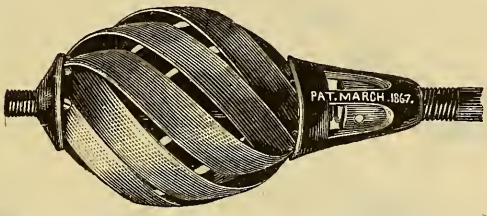
EXTRA SIZES—NOT ILLUSTRATED.

1 in.	Round Face Gothic Style, 3-16 in. deep and heavy	8 cents.
1 1/2	" " " 1/4 " "	12 "
2	" " " 1/4 " "	15 "
2 5/8	Condensed Clarendon, 1/8 in. deep	16 "
3	Roman, 5-16 in. deep, very heavy	25 "
1	Branding-Iron Pattern Letters, 1/4 in. deep	8 "
1 1/4	" " " 5-16 "	10 "
1 1/2	" " " 5-16 "	12 "

3/8, 1/2, 5/8 and 3/4 in. Condensed Gothic Brand Patterns, 5-16 in. deep, made to order, as they are not kept in stock.

NOTICE.—These are the sizes on the face of the letters, and are all finished and ready for use. They are fastened to patterns with a solution of gum shellac and alcohol (Pattern Makers' Varnish) or common glue. By placing a warm iron on the face of the letter it will warm the varnish and cement them on extra firm and strong. To fasten them permanently to iron patterns, first drill small holes in the letters, then glue them to the patterns, and when dry, with a drill a trifle smaller, drill through the holes into the patterns, into which drive small brass wire (snug fit), and rivet; smooth the face with a fine file, and they will be permanent.

BOILER TUBE SCRAPERS.



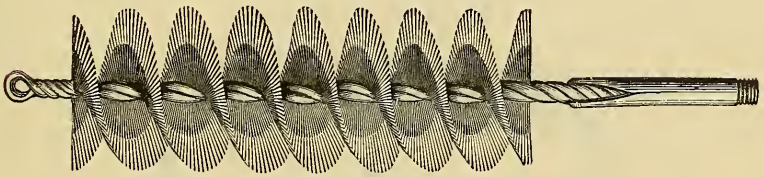
Christoffel's Patent Elliptic.

REDUCED PRICE LIST.

SIZE.	PRICE.	SIZE.	PRICE.
2 in. and under	$2 50	3¾ in.	$4 25
2¼ "	2 75	4	4 50
2½ "	3 00	4¼	4 75
2¾ "	3 25	4½	5 00
3 "	3 50	5	6 50
3¼ "	3 75	5½	7 00
3½ "	4 00	6	7 50

The above sizes are outside measurement.

PATENT BOILER FLUE BRUSHES.

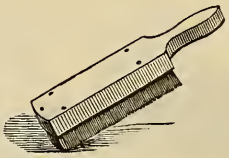


PRICE LIST.

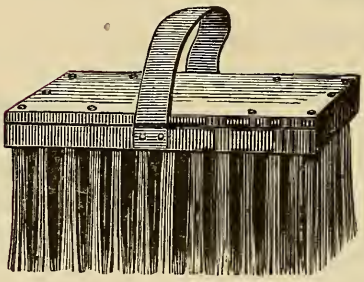
Size.	Price, Whalebone.	Price, Steel Wire.	Size.	Price, Whalebone.	Price, Steel Wire.
1 in.	$1 00	$1 35	3¼ in.	$1 75	$2 25
1¼	1 00	1 40	3½	2 00	2 50
1½	1 00	1 45	4	2 25	2 75
1¾	1 10	1 55	4½	2 50	3 00
2	1 20	1 65	5	2 75	3 25
2¼	1 25	1 75	5½	3 00	3 50
2½	1 25	1 85	6	3 25	3 75
2¾	1 50	1 95	7	3 75	4 75
3	1 65	2 10			

These sizes are outside measurement.

STEEL CASTING BRUSHES.



No. 5.

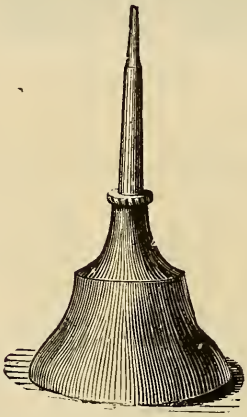


No. 4.

No. 6.

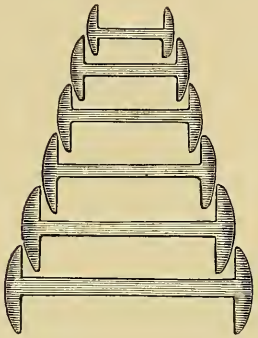
No. 4.	Square Brush	$7 00	per dozen.
4.	Extra "	9 00	"
5.	Plain "	7 50	"
5.	Extra "	9 00	"
6.	Round "	7 00	"
6.	Extra "	9 00	"

MALLEABLE IRON OILER.



Price ..... $6 00 per dozen.

BLAKE'S PATENT BELT STUDS.

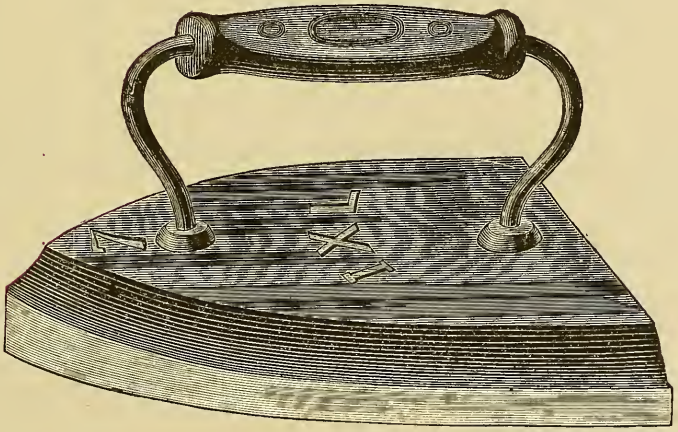


Nos.	00	0	1	2	3	4	5	
Price	$3 00	2 50	2 00	1 50	1 00	0 90	0 75	per 100.

POINTED BELT HOOKS.

Nos.	3	4	5	6	7	8	9	10	11	12	13	
Price	$12 00	10 00	8 50	7 00	5 00	4 00	3 50	3 00	2 75	2 50	2 25	per 1000.

SAD IRONS.



Price ---------- per pound.

All sizes, from 5 to 9 pounds. Put up in full or half cases, assorted to suit the purchaser.

LEATHER BELTING.

PRICE LIST PER RUNNING FOOT.

1 in.	$0 06	3¾ in.	$0 39	12 in.	$1 38	23 in.	$3 06
1¼	09	4	42	13	1 50	24	3 22
1½	12	4½	48	14	1 62	26	3 56
1¾	15	5	54	15	1 78	28	3 90
2	18	5½	60	16	1 94	30	4 22
2¼	21	6	66	17	2 10	32	4 54
2½	24	7	78	18	2 26	34	4 86
2¾	27	8	90	19	2 42	36	5 18
3	30	9	1 02	20	2 58	40	5 82
3¼	33	10	1 14	21	2 74	44	6 46
3½	36	11	1 26	22	2 90	48	7 10

Solid.

ROUND BANDS.	PER RUNNING FOOT.
⅛ in.	5 cents.
3/16	7 "
¼	10 "
5/16	12 "
⅜	14 "

Twist.

ROUND BANDS.	PER RUNNING FOOT.
⅜ in.	17 cents.
½	19 "
5/8	24 "
¾	30 "
⅞	36 "
1	42 "

Double Belts, Double Price.

RUBBER BELTING.

PRICE LIST.

3-Ply.

	PER FOOT.		PER FOOT.
2 in.	$0 17	12 in.	$1 08
3	26	13	1 18
4	34	14	1 28
5	43	15	1 38
6	52	16	1 50
7	60	18	1 70
8	70	20	1 90
9	80	22	2 12
10	90	24	2 36
11	1 00		

4-Ply.

	PER FOOT.		PER FOOT.
2 in.	$0 21	12 in.	$1 30
3	31	13	1 42
4	42	14	1 54
5	52	15	1 66
6	62	16	1 78
7	73	18	2 02
8	84	20	2 26
9	95	22	2 52
10	1 07	24	2 80
11	1 18		

Intermediate widths at proportionate prices.

Heavy 5- and 6-Ply Belts made to order for purposes where great strength is required, as a substitute for double leather, at an advance of 25 and 50 per cent. on 4-Ply prices.

2-PLY MACHINE BELTING.

For Agricultural Machines, Railway Belts, and other Light Work.

	PER FOOT.		PER FOOT.		PER FOOT.		PER FOOT.
1 in.	7 cents.	1½ in.	10 cents.	2½ in.	17 cents.	3½ in.	24 cents.
1¼	8½ "	2	14 "	3	20 "	4	28 "

Special orders for Belts of any thickness and width can be executed within two weeks from the receipt of the order. No Belts usually kept heavier than 4-Ply, or more than 20 inches in width. *Endless Belts*, of any width or length, made to order.

A full roll of Belting measures 250 to 300 feet.

STEAM PACKING.

This article is now considered by engineers and machinists as indispensable wherever steam joints are to be made. No other substance has so much elasticity, and at the same time stands so high a degree of heat.

	PER POUND.
Mixed or Fibrous Packing, in sheets of all thicknesses, from $\frac{3}{32}$ of an inch upwards, about one yard wide, of any length required	$0 50
Thinner sizes of same—say $\frac{1}{16}$ of an inch or less	60
Stock sizes—$\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$.	
Plain or Gum Packing, with cloth insertion, in sheets of all thicknesses, from $\frac{3}{32}$ of an inch upwards, about one yard wide, any length required	55
Thinner sizes of same—say $\frac{1}{16}$ of an inch or less	65
Stock sizes—$\frac{1}{64}$, $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$.	
Plain or Gum Packing, with Cloth insertion, and Cloth one or both sides, as desired, from $\frac{3}{32}$ upwards	55
Thinner sizes—say $\frac{1}{16}$ of an inch or less	65
Gaskets, Washers, Rings, etc., of *Pure* Vulcanized Rubber, with or without Cloth insertion	$1 00 to 1 50
Gaskets, Washers, Rings, etc., of Fibrous Packing	60
Pure Vulcanized Sheet Rubber, of all thicknesses, for Valves, Disks, Gaskets, Washers, Rings, etc., where great elasticity is required	1 00
Extra Pure Vulcanized Rubber Valves, for Hot and Cold Water Pumps, Vacuum Pumps, Foot and Delivery Valves, etc.	$1 00 to 1 50
Square Piston and Valve Rod Packing, all sizes, from $\frac{1}{4}$ to 2 inches square, in lengths of 12 feet	80
Tuck's Round Packing, with Rubber Core	80

MANILA ROPE,

OF BEST QUALITY.

For convenience we subjoin the following

ESTIMATED WEIGHT OF CORDAGE.

SIZE IN DIAM.	WEIGHT OF 100 FEET.	SIZE IN DIAM.	WEIGHT OF 100 FEET.
$\frac{7}{16}$ in.	7 pounds.	$1\frac{7}{16}$ in.	62 pounds.
$\frac{1}{2}$	8 "	$1\frac{1}{2}$	67 "
$\frac{9}{16}$	11 "	$1\frac{5}{8}$	84 "
$\frac{5}{8}$	15 "	$1\frac{3}{4}$	100 "
$\frac{3}{4}$	17 "	2	120 "
$\frac{13}{16}$	21 "	$2\frac{1}{4}$	142 "
$\frac{7}{8}$	25 "	$2\frac{3}{8}$	170 "
1	33 "	$2\frac{1}{2}$	192 "
$1\frac{1}{16}$	36 "	$2\frac{3}{4}$	217 "
$1\frac{1}{8}$	42 "	$2\frac{7}{8}$	243 "
$1\frac{1}{4}$	46 "	3	276 "
$1\frac{3}{8}$	54 "	$3\frac{1}{2}$	350 "

WIRE ROPE.

For Hoisting and Mining Purposes, Inclined Planes, Bridges, Derricks, Etc.

	STEEL.				CHARCOAL IRON.				
	Circum. in Inches.	Diam. in Inches.	Price per Foot.		Circum. in Inches.	Diam. in Inches.	PRICE PER FOOT. 19 wires to strand.	PRICE PER FOOT. 7 wires to strand.	Breaking strain for Steel and Iron in tons
19 Wires in Strand	3¾	1¼	75c.	Equal to	5	1⅝	80c.	75c.	44
19 " "	3½	1⅛	60		4½	1½	65	60	35
19 " "	*3⅛	1	50		3¾	1¼	53	45	24
19 " "	*2¾	⅞	44		3½	1⅛	43	39	20
12 " "	2½	13/16	35		*3⅛	1	35	32	16
12 " "	*2¼	¾	29		*2¾	⅞	29	25	11½
12 " "	*2	5/8	25		2½	13/16	27	23	10
12 " "	1¾	9/16	23		*2¼	¾	25	20	8⅝
12 " "	1½	½	20		*2	5/8	24	14	5⅛
7 " "	1¾	9/16	20		*1⅝	9/16	22	13	4¼
7 " "	*1½	½	17		*1½	½	20	12	3½
					*1⅜	7/16		10	2⅞
					*1¼	⅜		9	2⅛
					*1⅛	5/16		8	1⅝
					*1	9/32		7	1⅜
					* ⅞	¼		6½	1
					* ⅝	3/16		6	⅝
					*	⅛		4	

* Tiller Rope, ⅝ in. diameter, 28 cents per foot.

* Tiller Rope, ½ in. diameter, 23 cents per foot.

Sizes marked with * can be furnished any desired length. Other sizes furnished to order.

Proper working load for hoisting ropes is about one-fifth of breaking strain.

GALVANIZED CHARCOAL WIRE ROPE.

For Ships' Rigging, Stays, Guys, Bridges, Derricks and Ferry Purposes.

	Circum. in Inches.	Diam. in Inches.	Weight per Fathom. (6 feet.)	Circum. of Hemp. Equal Strength.	Weight per Fathom of Hemp.	Breaking Strain in Tons.	Price per Pound.
12 Wires in Strand	4½	1½	18 lbs.	9 in.	21 lbs.	30	14½ c.
12 " "	4¼	1⅜	16	8½	18½	26	14½
12 " "	4	1 5/16	14	8	16	23	15
12 " "	3¾	1¼	12	7½	14	20	15
12 " "	3½	1⅛	10	7	12½	16	15
12 " "	3¼	1 1/16	8½	6½	10½	14	15½
12 " "	3	1	7½	6	9¼	12	16
12 " "	2¾	⅞	6½	5½	7½	10	16
7 " "	2½	13/16	5½	5	6½	9	15¾
7 " "	2¼	¾	4½	4½	5	8	16¼
7 " "	2	5/8	3½	4	4⅛	7	16½
7 " "	1¾	9/16	2¾	3½	3	5	17¼
7 " "	1½	½	2¼	3	2¼	3½	19
7 " "	1¼	3/8	1¾	2½	1½	2½	21
7 " "	1	5/16	1¼	2	1	2	22

These prices are for best quality. Lower grades furnished to order.

WIRE.

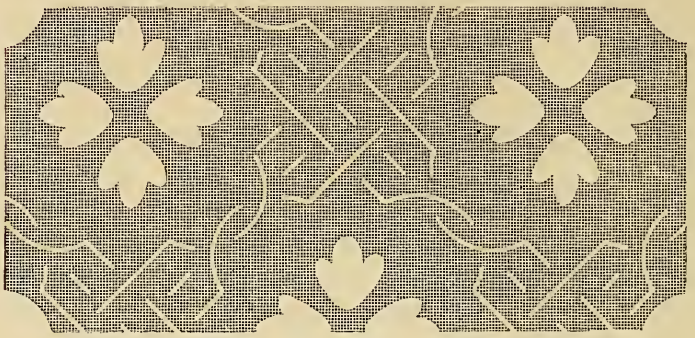
WEIGHT OF 100 LINEAL FEET.

Birmingham Wire Gauge.

Wire Gauge.	Iron.	Steel.	Copper.	Brass.
0000	54.62	55.13	62.39	58.93
000	47.86	48.32	54.67	51.64
00	38.27	38.63	43.71	41.28
0	30.63	30.92	34.99	33.05
1	23.85	24.07	27.24	25.73
2	21.37	21.57	24.41	23.06
3	17.78	17.94	20.3	19.18
4	15.01	15.15	17.15	16.19
5	12.82	12.95	14.65	13.84
6	10.92	11.02	12.47	11.78
7	8.586	8.667	9.807	9.263
8	7.214	7.283	8.241	7.783
9	5.805	5.859	6.63	6.262
10	4.758	4.803	5.435	5.133
11	3.816	3.852	4.359	4.117
12	3.148	3.178	3.596	3.397
13	2.392	2.414	2.732	2.58
14	1.826	1.843	2.085	1.969
15	1.374	1.387	1.569	1.482
16	1.119	1.13	1.279	1.208
17	.8915	.9	1.018	.9618
18	.6363	.6423	.7268	.6864
19	.4675	.472	.534	.5043
20	.3246	.3277	.3709	.3502
21	.2714	.274	.31	.2929
22	.2079	.2098	.2373	.2241
23	.1656	.1672	.1892	.1788
24	.1283	.1295	.1465	.1384
25	.106	.107	.1211	.1144
26	.0859	.0867	.0981	.0926
27	.0678	.0685	.0775	.0732
28	.0519	.0524	.0593	.056
29	.0448	.0452	.0511	.0483
30	.0382	.0385	.0436	.0412
31	.0265	.0267	.0303	.0286
32	.0215	.0217	.0245	.0231
33	.017	.0171	.0194	.0183
34	.013	.0131	.0148	.014
35	.0066	.0067	.0076	.0071
36	.0042	.0043	.0048	.0046

WIRE CLOTHS.

FOR MOSQUITO SCREENS.

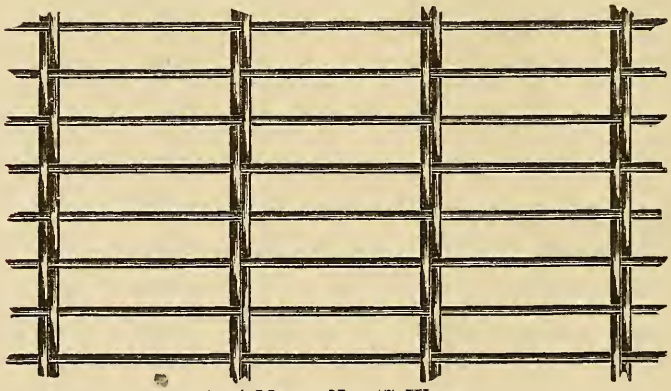


Figured Pattern.

Green, Drab or Black Colors	5	cents per square foot.
Figured Patterns	8	" " "
Landscape " for Windows	25	" " "

Special prices for large orders.

WINDOW GUARD CLOTHS.



1×4 MESH, No. 17 WIRE.

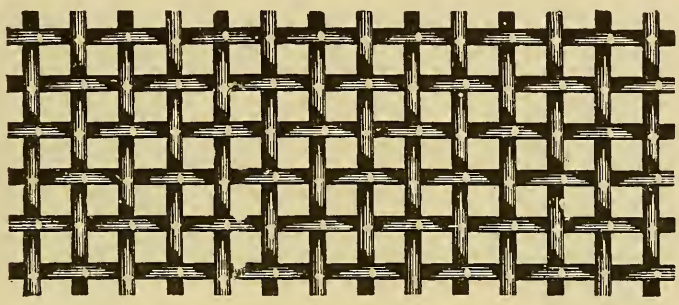
1×4 No. 17 Window Guard Cloth ..... 18 cents per square foot.

Above is the best style of Netting for this purpose, giving perfect protection to the glass, and is cheaper than any other suitable material.

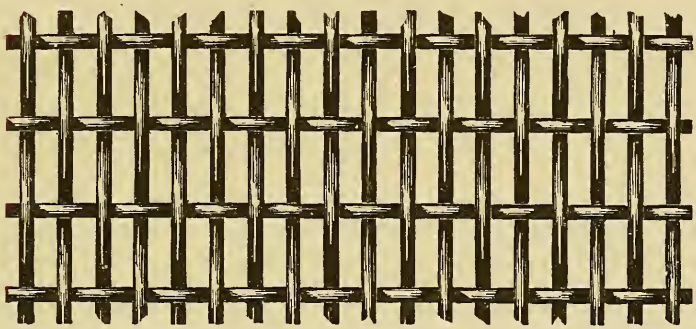
The Wire Cloth for Mosquito Netting is heavily coated with oil paint, by a patent process, either green, drab or black. The Figured patterns have a ground color of green or drab, relieved by a white figure, as shown in the cut.

The Landscape patterns are coated with a ground color of drab, and afterwards beautifully decorated by hand with scenes from nature, or objects of art, so that persons inside a room are entirely secluded from the gaze of outsiders, at same time can look out without difficulty.

LOCOMOTIVE SPARKER NETTINGS.



4×4 Mesh, No. 14 Wire.



5×2 Mesh, No. 14 Wire.

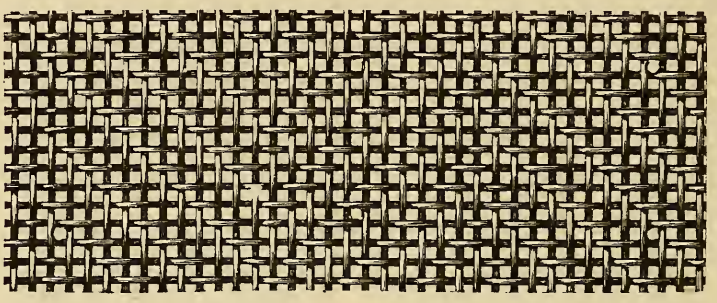
Crimped Cloths for Coal Burning Locomotives.

NO. OF MESHES PER INCH.	NO. OF WIRE.	PRICE PER FOOT.
3 × 3	13	25 cents.
3½ × 3½	13	25 "
4 × 4	14	25 "
5 × 2	14	25 "
5 × 5	15	25 "
6 × 6	16	25 "
8 × 8	18	30 "
10 × 10	19	30 "

COAL SCREEN CLOTH.

SIZE OF MESHES.	NO. OF WIRE.	PRICE PER FOOT.
1¼ × 1¼	5	35 cents.
1⅛ × 1⅛	6	35 "
1 × 1	7	35 "
⅞ × ⅞	8	35 "
¾ × ¾	9	35 "
⅝ × ⅝	10	35 "

LOCOMOTIVE SPARKER NETTING.



10×10 Mesh, No. 20 Wire.

Cloth for Wood Burning Locomotives.

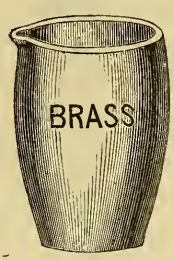
NO. OF MESHES PER INCH.	NO. OF WIRE.	PRICE PER FOOT.
4× 4	15	25 cents.
5× 5	17	25 "
6× 6	18	25 "
8× 8	19	25 "
10×10	20	25 "
12×12	20	25 "

We desire to call attention of Master Mechanics and Purchasing Agents to the Sparker Nettings, for both coal and wood burning Locomotives. They are used extensively on many of the most prominent railroads, and are highly recommended. The engravings are of full size, and give an exact measurement of the cloth, both in size of wire and number of meshes per inch.

WIRE CLOTH.

No. 1, or Fan Mill Grade.			No. 5, Heavy Grade.		
Meshes per inch.	No. of Wire.	Price per square foot.	Meshes per inch.	No. of Wire.	Price per square foot.
2× 2	19	6 cents.	2× 2	16	12 cents.
3× 3	20	6 "	3× 3	17	12 "
4× 4	22	6 "	4× 4	18	12 "
5× 5	23	6 "	5× 5	19	12 "
6× 6	24	6 "	6× 6	20	12 "
7× 7	25	6 "	7× 7	21	12 "
8× 8	26	6 "	8× 8	22	12 "
9× 9	27	6 "	9× 9	23	12 "
10×10	28	6 "	10×10	24	12 "
12×12	30	6 "	12×12	26	12 "
13×13	32	6 "			
14×14	33	6 "			
16×16	34	6 "			
18×18	34	6 "			
20×20	35	6 "			

BLACK LEAD CRUCIBLES.



Dixon's.

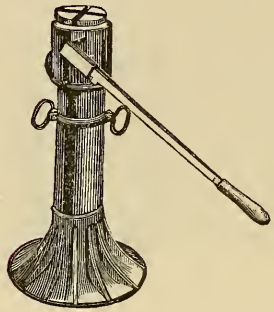
Price ..... 8½ cents per No.

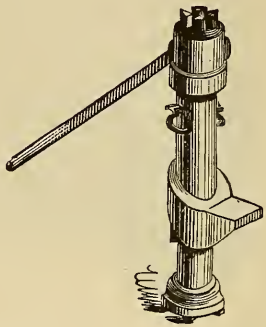
ASSORTMENT AND CAPACITY.

No. 6	.....	12	to 15	pounds.
8	.....	16	" 20	"
10	.....	20	" 25	"
12	.....	24	" 30	"
14	.....	28	" 35	"
16	.....	32	" 40	"
18	.....	36	" 45	"
20	.....	40	" 50	"
25	.....	50	" 65	"
30	.....	60	" 75	"
35	.....	70	" 85	"
40	.....	80	" 100	"
50	.....	100	" 125	"
60	.....	120	" 150	"

Dixon's Black Lead Crucibles have been in use for forty-five years, and are acknowledged to be the most reliable melting pots for brass, steel, and the precious metals, now known.

HYDRAULIC JACKS.





Dudgeon's Patent.

TO LIFT FROM THE TOP—NARROW BASE.

7	tons, to run out	12	inches	$70 00
7	" "	24	"	75 00
10	" "	12	"	80 00
10	" "	18	"	100 00
15	" "	12	"	100 00
20	" "	12	"	120 00
30	" "	9	"	150 00
30	" "	12	"	175 00

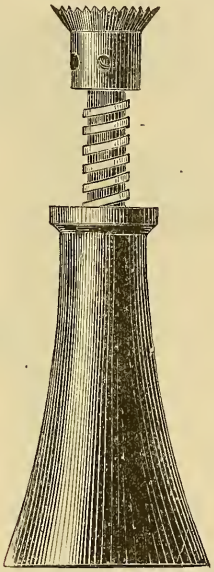
TO LIFT FROM THE TOP—WIDE BASE, FOR LOCOMOTIVE SHOPS.

7	tons, to run out	12	inches	$80 00
7	" "	18	"	85 00
10	" "	12	"	95 00
10	" "	18	"	110 00
15	" "	12	"	125 00
15	" "	18	"	150 00
20	" "	12	"	150 00
30	" "	9	"	170 00
30	" "	12	"	200 00

TO LIFT FROM THE GROUND—NARROW BASE.

4	tons, to run out	12	inches	$60 00
4	" "	12	"	65 00
7	" "	12	"	85 00
7	" "	24	"	90 00
10	" "	12	"	100 00
15	" "	12	"	150 00

JACK SCREWS.

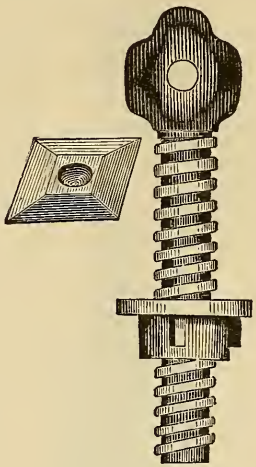


Wrought Iron Screw and Cast Barrel.

PRICE LIST.

DIAMETER OF SCREW.	LENGTH OF BARREL.	PRICE EACH.
1½ in.	6 in.	$4 00
1½	8	4 75
1½	10	5 00
1½	12	5 50
1¾	6	4 50
1¾	8	5 00
1¾	10	5 50
1¾	12	6 00
1¾	14	6 50
1¾	16	8 00
2	8	5 75
2	10	6 50
2	12	7 75
2	14	8 00
2	16	9 50
2	18	10 00
2	20	10 50
2	24	13 50
2¼	14	10 50
2¼	16	12 00
2¼	18	12 75
2¼	20	13 50
2¼	24	16 00
2½	14	12 00
2½	16	12 75
2½	18	13 75
2½	20	14 75
2½	24	17 50

JACK SCREWS.



Cast Iron with Head Plate.

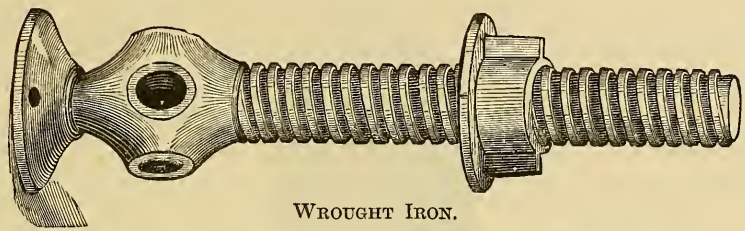
3 in. diameter, 18 in. long ..... $6 00 each.

Wrought Iron Stand and Screw.

SWIVEL OR LOOSE CAP.

DIAMETER OF SCREW.	LENGTH OF STAND.	PRICE EACH.
1½ in.	8 in.	$6 00
1¾	9	7 00
2	12	10 00
2½	14	14 00
3	16	16 00

CIDER PRESS SCREW.



WROUGHT IRON.

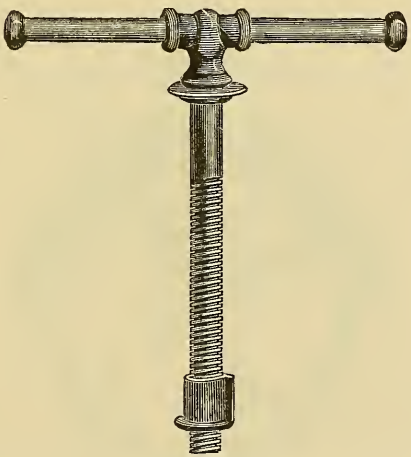
Diameter of Screw	2	2¼	2¼	2½	2¾	2¾	3 in.
Length "	42	36	48	48	36	42	36 in.
Price, each	$12 25	13 25	15 00	17 50	17 00	18 75	23 75

Diameter of Screw	3	3	3½	3½	4	4	4	4½ in.
Length "	48	54	48	72	48	60	72	72 in.
Price, each	$27 50	30 00	32 50	40 00	37 50	40 00	45 00	52 50

CAST IRON.

Diameter	4 in.
Length	48
Price	$15 00

IRON BENCH SCREW.



Wood Handles and Movable Collars.

1 in. diameter	$6 00	per dozen.
1⅛ "	7 00	"
1¼ "	8 25	"
1½ "	13 00	"

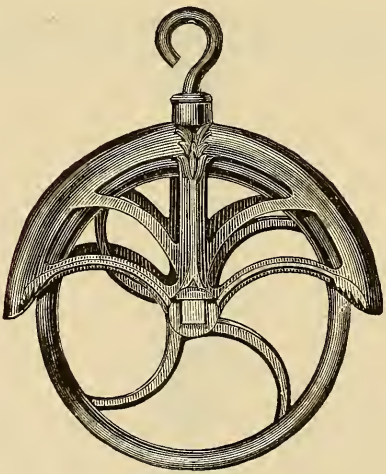
Packed in Cases of 1 Dozen each.

WELL BUCKETS.

Made of Oak.

With Plain Bale	$7 00	per dozen.
" Swivel " light	8 50	"
" " " heavy	9 50	"

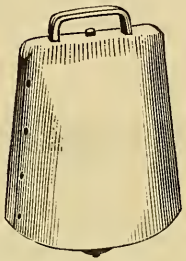
WELL WHEELS.



Japanned.

8 in.	$8 00
10	10 00
11	11 00
12	12 00
14	14 00

COW BELLS.



Texas Pattern.

Nos.	00	0	1	2	3	4	5	6	7	8	
Price,	$12 00	10 00	8 00	6 25	5 25	4 50	3 50	2 75	2 25	2 00	per dozen.

Dodge's Genuine Kentucky.

Nos.	0	1	1½	2	3	4	5	6	
Price,	$14 00	11 00	9 75	8 50	7 00	5 60	4 20	2 80	per dozen.

Common Wrought.

Nos.	0	1	2	3	4	5	6	7	8	9	10	
Price,	$1 55	1 70	2 00	2 40	2 75	3 50	4 00	4 50	5 50	6 50	7 50	per dozen.

FENCE STAPLES.

About ½ gross to a pound ..... 15 cents per pound.

FENCE WIRE.

Nos. 7, 8 and 9 ..... 7 cents per pound.

FENCE WIRE TABLE.

No.	Weight per rod of 16½ feet.		Weight of 1 mile.	Length of a 63-lb. bundle.	Length of 100 pounds.	Length of a ton.
	POUNDS.	OUNCES.	POUNDS.	YARDS.	YARDS.	YARDS.
7	1	9	461	239	380	7,600
8	1	4	389	286	456	9,120
9	1		323	342	543	10,860
10		14	264	420	667	13,340
11		10	211	529	840	16,800
12		8	163	700	1,111	22,220
14		5	97	1,142	1,813	36,260
16		3	57	1,954	3,100	62,000

FENCE AUGERS.

Vaughan's Patent.

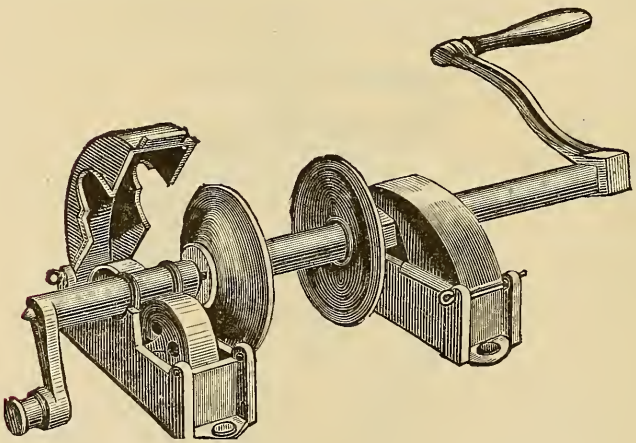
6 in.	$24 00	per dozen.
9	25 00	"

For Setting Telegraph Poles.

10 in.	$7 00	each.
11	7 50	"
12	8 00	"

Extra parts of this Auger can be furnished if desired.

GRINDSTONE HANGINGS.



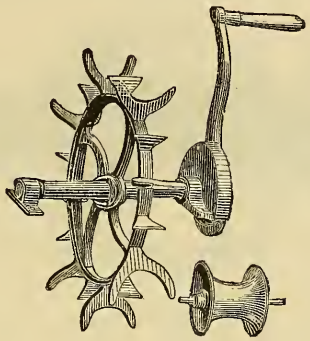
Extra Heavy. New Style.

With Cast Iron Shaft. — Tight Box.

Length	15	17	19	21	24	in. shaft.
Price	$15 00	16 00	19 00	21 00	22 00	per dozen.

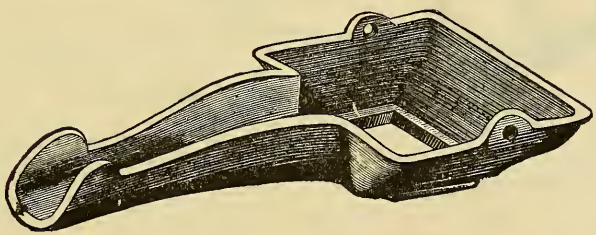
Packed 6 Sets in a Case.

CHAIN PUMP REEL.



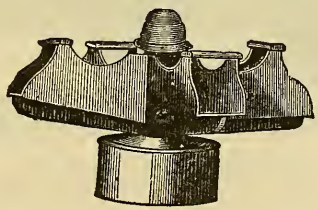
Old Style, for 1½ in. chain ..... $15 00 per dozen.
New " " 1½ " ..... 11 00 "
Extra Heavy, for 2 in. chain ..... 18 00 "

CHAIN PUMP SPOUT.



Price ..... $3 00 per dozen.

REVOLVING CLOTHES IRON.

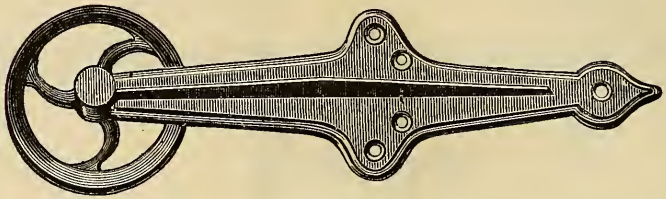


New Style.

With a Solid Cap to Cover the Post.

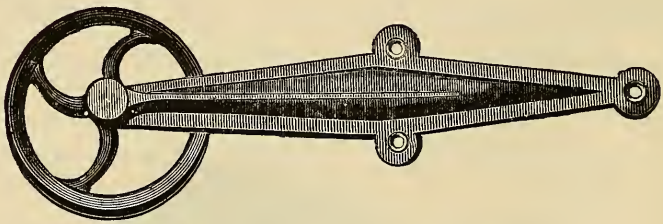
Price ..... $20 00 per dozen.

BARN DOOR HANGERS.



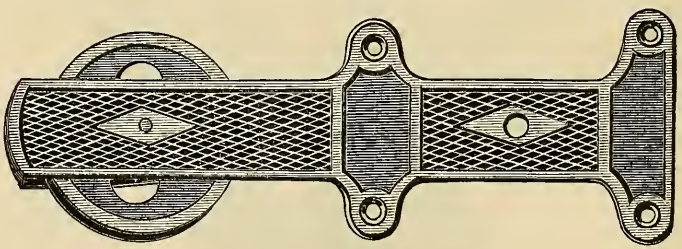
No. 1. New Pattern, Japanned.

Size	3	4	5	6	8	in.
Price	$0 55	0 75	1 00	1 30	2 00	per pair.



No. 2. Extra Heavy, Japanned.

Size	2½	3	4	5	6	8	10	in.
Price	$0 45	0 65	0 90	1 25	1 40	2 20	3 00	per pair



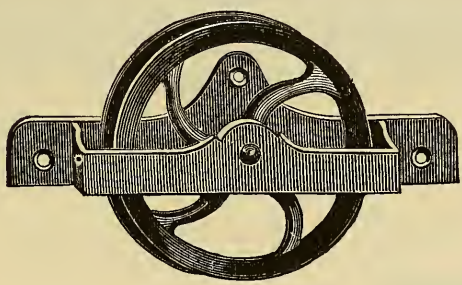
No. 3. New England Pattern.

With Square Groove Wheels.

Size	3	4	5	6	in.
Price	$1 15	1 60	2 10	2 70	per pair.

Above are packed 12 Pairs in a Case.

BARN DOOR ROLLERS.



Japanned.

Size	4	5	6	8	10	12	16 in.
Price	$0 75	1 00	1 25	2 15	3 30	4 50	6 50 per pair.

BARN DOOR RAIL.

Pattern of Nos. 0, 1 and 2.

No. 0.	½ in. for Small Wheels	10½	cents per foot.
1.	⅝ " Medium "	14	" "
2.	⅞ " Large "	21½	" "

Pattern of Nos. 3 and 4, for Square Groove Wheels.

No. 3.	Flat, for 3 and 4 in. Wheels	11	cents per foot.
4.	" " 5 " 6 "	12	" "

Pattern of No. 5.

No. 5.	Angular	10	cents per foot.

Barn Door Rail, Packed 200 Feet in a Case.

SLIDING DOOR RAIL.

Painted Drab.

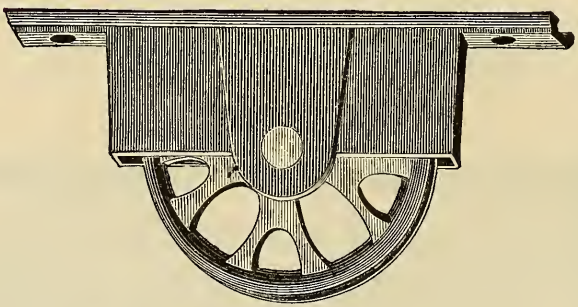
1¼ in. ..... 10 cents per foot.

BARN DOOR STAYS.

To Screw.

No. 2 ..... $4 20 per dozen.

SLIDING DOOR SHEAVES.



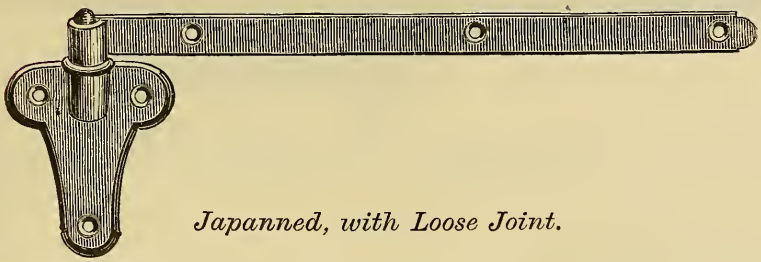
Iron Case and Wheels, Brass Rivets.

Size	1¾	2¼	3	4	5	6 in.
Price	$0 88	1 20	1 37	1 90	2 50	3 00 per set.

Iron Case, Brass Wheels, Brass Rivets.

Size	1¾	2¼	3	4	5	6 in.
Price	$1 55	2 50	2 75	3 85	5 50	7 75 per set.

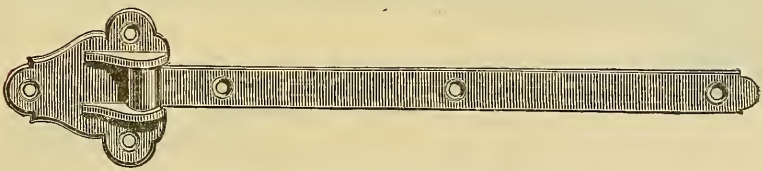
PLATE HINGES.



Japanned, with Loose Joint.

Width	¾	¾	⅞	⅞	1	1	1⅛ in.
Length	6	8	10	12	14	16	18 in.
Price	22	22	19	19	19	19	19 cents per pound.

Width	1¼	1⅜	1½	1¾	1¾	2 in.
Length	20	22	24	28	30	36 in.
Price	19	19	19	19	19	19 cents per pound.

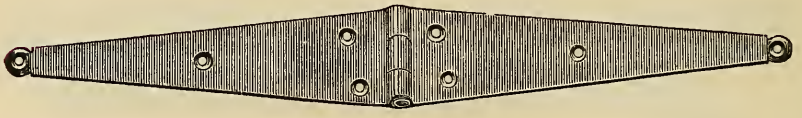


Japanned, with Fast Joint.

Width	¾	¾	⅞	⅞	1	1	1⅛ in.
Length	6	8	10	12	14	16	18 in.
Price	22	22	19	19	19	19	19 cents per pound.

Width	1¼	1⅜	1½	1¾	1¾	2 in.
Length	20	22	24	28	30	36 in.
Price	19	19	19	19	19	19 cents per pound.

STRAP HINGES.



Light.

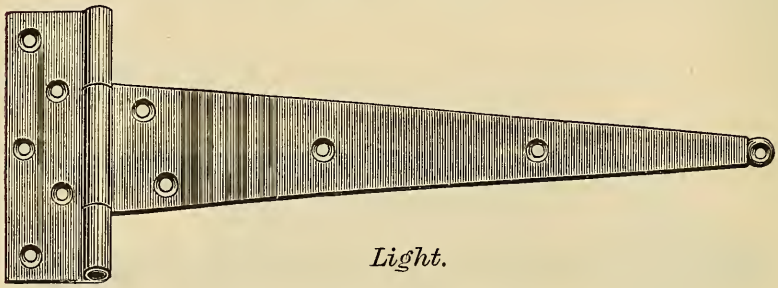
Length	3	4	5	6	8	10	12	14	in.
Price	$0 75	0 90	1 10	1 35	2 00	2 75	4 50	5 75	per dozen pairs.

Heavy.

Length	4	5	in.
Price	$1 10	1 50	per dozen pairs.

Length	6	8	10	12	14	16	in.
Price	13	13	12	11	11	11	cents per pound.

T-HINGES.



Light.

Length	3	4	5	6	8	10	12	14	in.
Price	$0 75	0 85	1 00	1 20	1 50	1 90	2 80	4 25	per dozen pairs.

Heavy.

Length	6	8	10	12	14	16	in.
Price	$1 30	1 80	2 60	4 00	6 00	6 50	per dozen pairs.

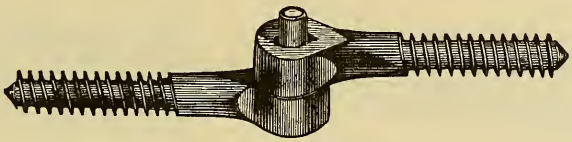
Extra Heavy.

Length	5	6	8	10	12	14	16	in.
Price	13	13	13	12	11	11	11	cents per pound.

Long Chest Hinges.

Length	6	8	10	12	14	in.
Price	$1 25	1 50	2 00	2 50	3 00	per dozen pairs.

BARN DOOR HINGES.



With Wood Screw at Both Ends.

Size	½	⅝	¾	⅞	1 in.
Price	24	23	21	20	20 cents per pound.

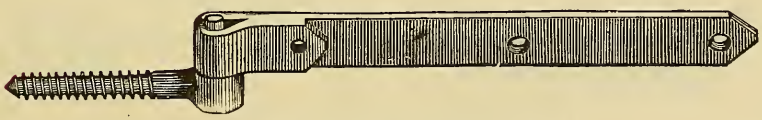
Wrought Hasps and Staples.

Length,	3	4	5	6	7	8	9	10	11	12 in.
Price,	$0 82	0 84	0 90	1 00	1 10	1 30	1 70	1 80	2 00	2 60 per dozen.

EXTRA HEAVY.

Length	6	7	8	9	10	11	12 in.
Price	$1 36	1 50	1 70	2 00	2 30	2 50	3 50 per dozen.

HEAVY WELDED HOOK HINGES.



With Wood Screw at One End.

Lengths 12 in. and under		11 cents per pound.
" 14 "	over 10 feet	10 " "

Wrought Hooks and Staples.

Length	2½	3	3½	4	4½	5 in.
Price	$5 50	6 40	7 30	8 50	9 50	10 50 per gross.

Length	5½	6	7	8	9 in.
Price	$11 50	12 50	15 50	20 00	22 00 per gross.

SPADES.

Nursery Spade.

D Handle, Plain Back Spade.

D Handle, Ditching Spade.

Tapering Drain Spade.

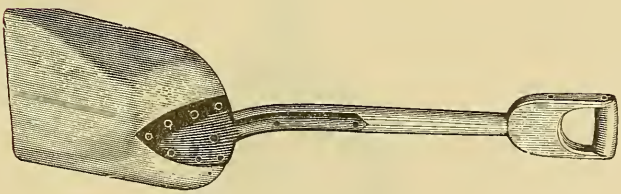
Concave or Post Spade.

Can furnish any style or brand, either Long or **D** Handle of above, at regular market rates.

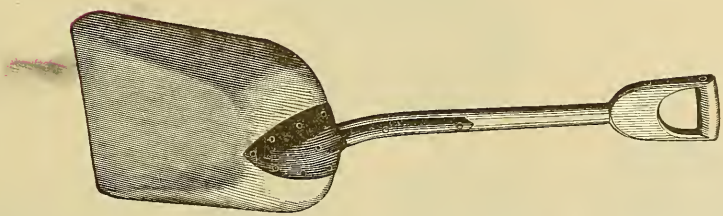
SHOVELS AND SCOOPS.

D Handle, Patent Shovel.

D Handle, Round Point Shovel.



No. 5. Alling's Scoop.

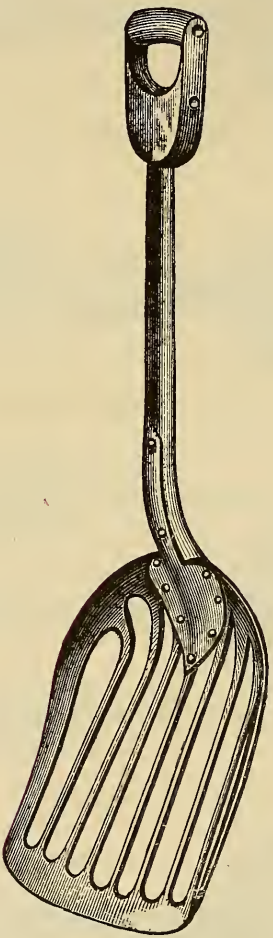


No. 7. Crane's Scoop.

Can furnish any style or brand, either Long or **D** Handle of above, at regular market rates.

MALLEABLE IRON

SCREENING SHOVEL.



Sabbaton's Patent.

Price..... $36 00 per dozen.

These shovels are made of best Malleable Iron, are very strong and durable, and are great labor-saving coal and ash screeners. Every factory, foundry, machine shop, or other place where coal is used in any considerable quantity, should have one or more of these shovels.

FARMERS' TOOLS.

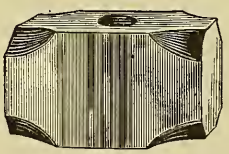
Beetle Rings.

Diameters....4, 4½, 5, 5½, 6 in.....13 cts. per pound.

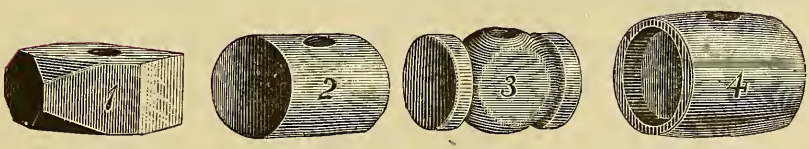
Wood-chopper's Wedge.

All Iron, Assorted Sizes ..... 7 cts. per pound
Solid Cast Steel, Assorted Sizes .....25 " "

POST MAULS.



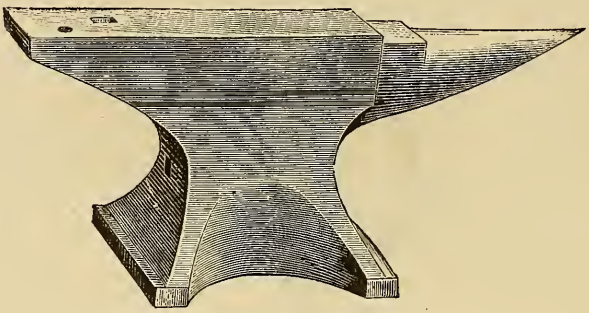
Square.



Octagon. *Round.* *Oval.* *Countersunk.*

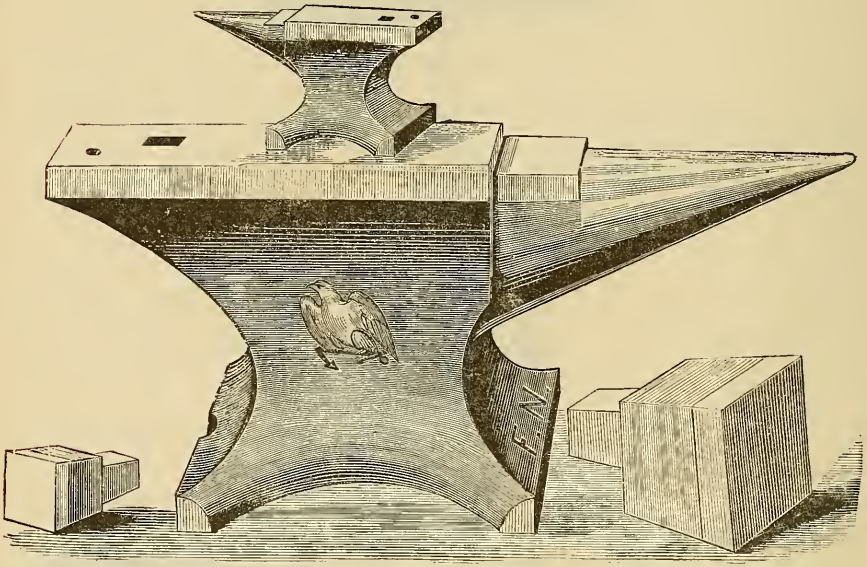
Assorted Sizes, 10 to 20 pounds .....6 cents per pound.

ANVILS.



Wrought Iron, Steel Face.

Peter Wright's	Price	16	cents	per pound.
Armitage or Mousehole	"	16	"	"
Wilkinson	"	15	"	"
Solid Cast Steel	"	15	"	"



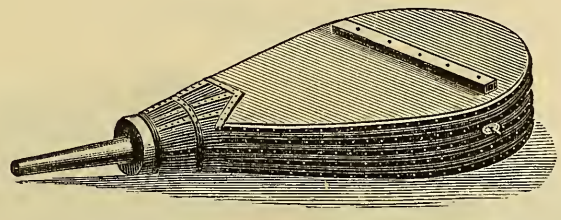
Cast Iron, Eagle Anvil, Warranted Steel Face.

Anvils weighing 100 to 800 pounds..... Price 14 cents per pound.

Minim Anvils.

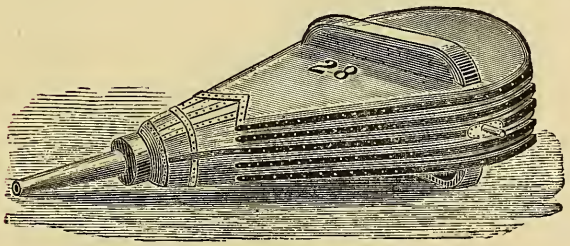
Nos.	00	0	1	2	3	4	5	6	7	8	9	
About	00	10	15	20	30	40	50	60	70	80	90	pounds.
Price,	$2 50	3 20	3 75	4 50	5 00	5 90	6 75	7 25	8 10	9 00	9 50	each.

BELLOWS.



Ordinary Pattern.

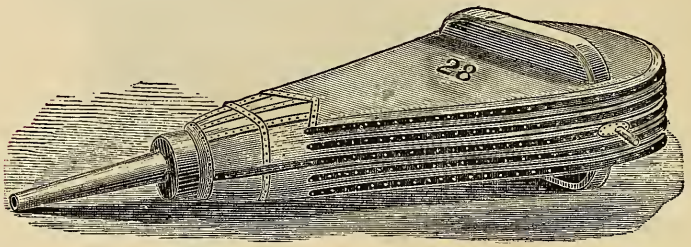
Width, 20 in.	$8 00	each.
" 22	8 00	"
" 24	8 00	"
" 26	9 00	"
" 28	10 50	"
" 30	12 00	"
" 32	13 50	"
" 34	15 00	"
" 36	16 50	"
" 38	19 00	"
" 40	22 00	"



Long Pattern.

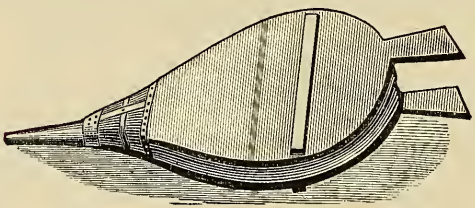
Width, 24 in.	$13 00	each.
" 26	13 00	"
" 28	13 00	"
" 30	14 00	"
" 32	16 50	"
" 34	17 75	"
" 36	19 00	"
" 38	22 00	"
" 40	25 00	"
" 42	28 00	"
" 44	32 00	"
" 46	37 00	"
" 48	45 00	"
" 50	55 00	"

BELLOWS.



Extra Long Pattern.

Width, 28 in.	$15 00	each.
" 30	16 00	"
" 32	18 50	"
" 34	19 75	"
" 36	21 00	"
" 38	24 00	"
" 40	27 00	"
" 42	30 00	"
" 44	35 00	"
" 46	40 00	"
" 48	50 00	"
" 50	60 00	"

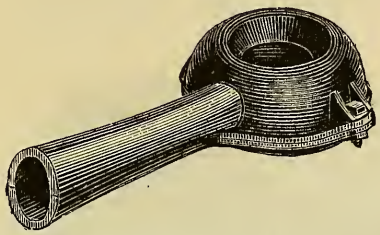


Moulders'.

Width, 10 in.	$21 00	per doz.
" 12	24 00	"
" 14	27 00	"

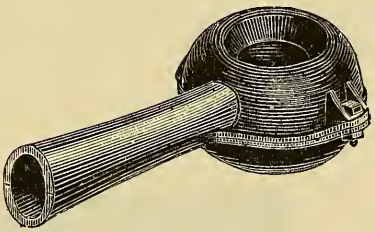
Each Bellows is encased in a broad strip of wood to prevent damage to the leather, and are made from the best of material in every respect.

TUYERE IRONS.



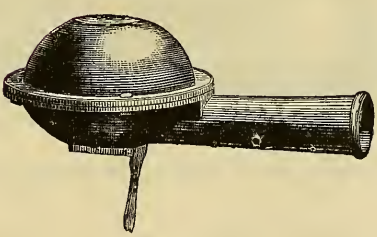
Single Duck Nest.

Improved Pattern ..... $1 25 each.



Double Duck Nest.

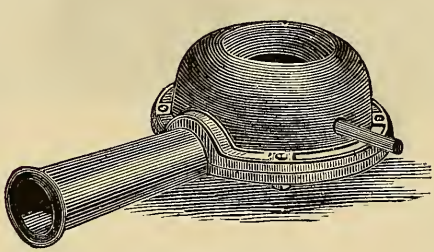
Improved Pattern ..... 1 75 each.



Monitor.

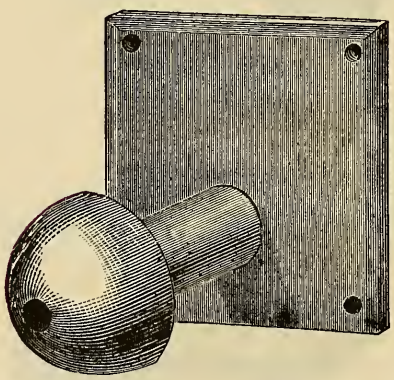
Standard Pattern ..... 3 00 each.

TUYERE IRONS.



Clark's Patent.

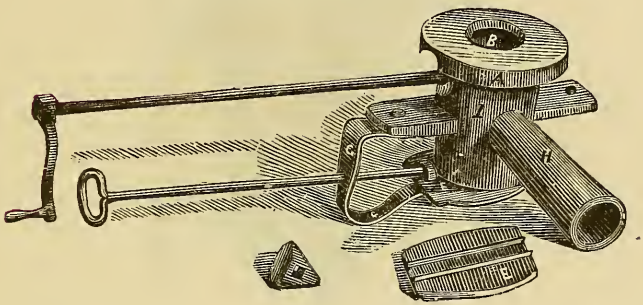
No. 1.	Used for Light Work	$2 75	each.
2.	" Carriage Work	3 00	"
3.	" all Ordinary Work	3 50	"
4.	" Heaviest Forging	5 25	"



Globe Head, with Back Plate.

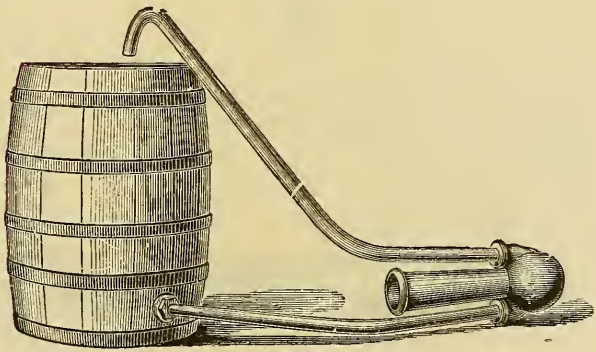
Globe Head, without Back Plate	$1 50	each.
" with "	2 50	"

TUYERE IRONS.



Norton's Patent.

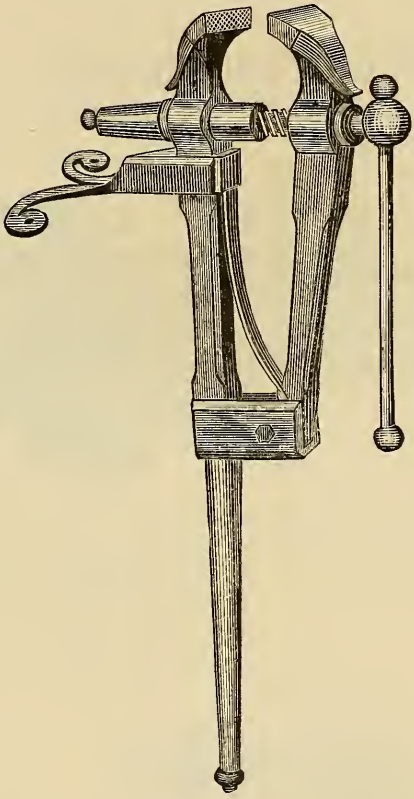
Old Reliable ---------- $4 50 each.



Dole's Patent Water Tuyere.

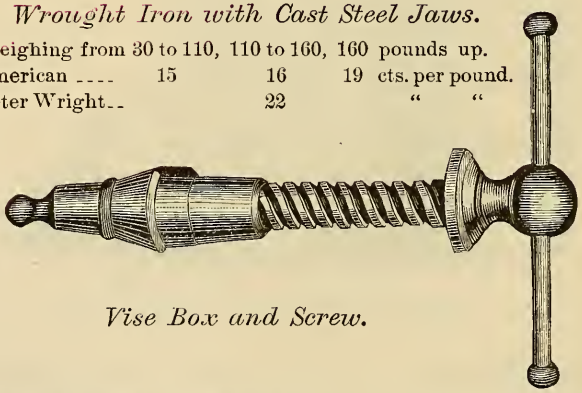
Blacksmith's Friend ---------- $7 00

SOLID BOX VISE.



Wrought Iron with Cast Steel Jaws.

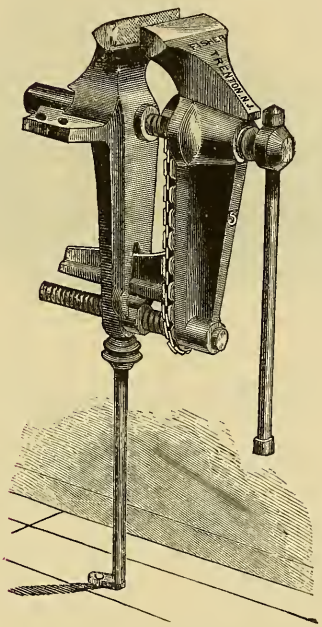
Weighing from	30 to 110,	110 to 160,	160 pounds up.
American	15	16	19 cts. per pound.
Peter Wright		22	" "



Vise Box and Screw.

To fit Vises from	30 to 45,	45 to 60,	60 to 80,	80 to 100,	100 to 120,	120 to 200 pounds.
Diameter of Screw,	1⅛	1¼	1⅜	1½	1⅝	1¾ in.
Price each,	$4 50	5 00	5 75	6 50	7 50	10 00

DOUBLE SCREW PARALLEL LEG VISE.



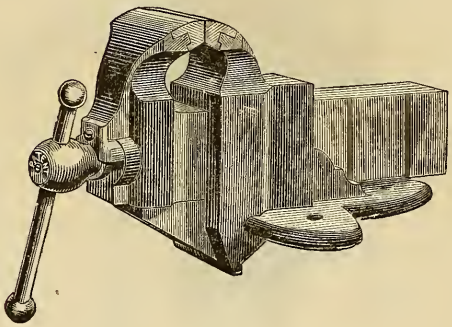
New.

Nos.	1	2	3	4	5	6
Jaws Length,	3½	4½	5¼	6¼	7	8 in.
Opens,	4¼	5¼	6½	7½	9	10 in.
Size Screw,	⅞	1⅛	1¼	1½	1¾	1¾ in. dia.
Price,	$8 00	$12 00	$17 00	$22 00	$30 00	$34 00

This Vise combines all the advantages of the Peter Wright in strength and lightness, fastening to the floor and bench, perfectly parallel at all points of opening, and never gets out of line. The Jaws are of the best tool cast steel, welded on, file cut and properly hardened. The Screws are forged of the best refined iron, and work in solid cut thread boxes. The lower Screw maintains the parallel position of the upper, having the exact motion, working through the connecting chain which regulates it.

All sizes are furnished with Swivel attachment, if desired, at an extra charge.

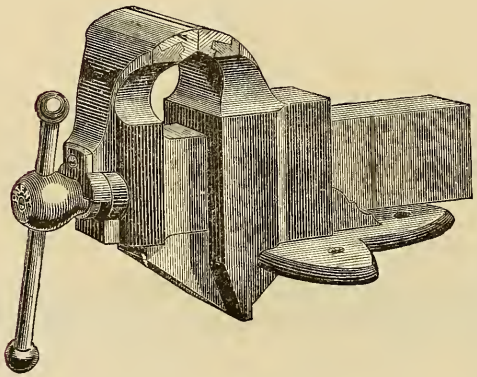
PARKER'S PAT. PARALLEL VISES.



No. 000. Round Jaws.

Length of Jaws.....3¼ in. Weight.....23 pounds.

Price.....$6 50

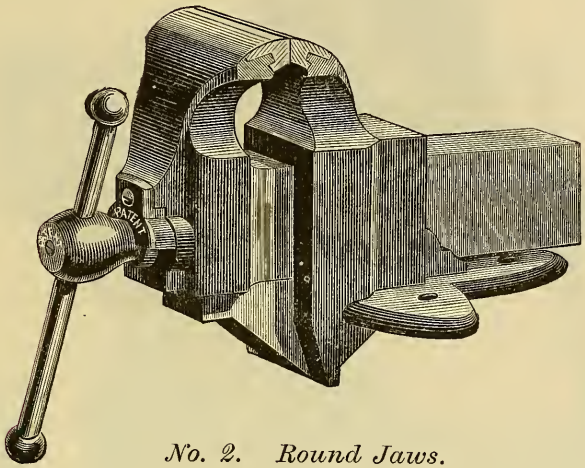


No. 1. Round Jaws.

Length of Jaws.....3⅝ in. Weight.....31½ pounds.

Price.....$7 50

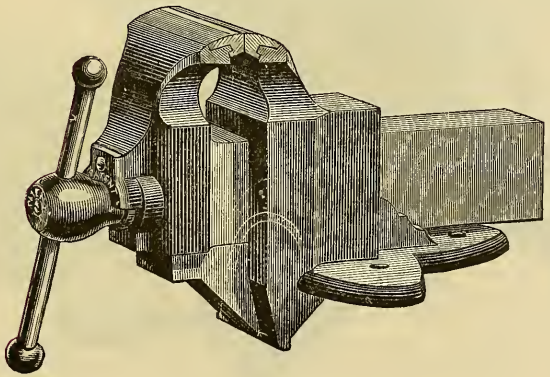
PARKER'S PAT. PARALLEL VISES.



No. 2. Round Jaws.

Length of Jaws.....4¼ in. Weight.....41½ pounds.

Price..... $9 50

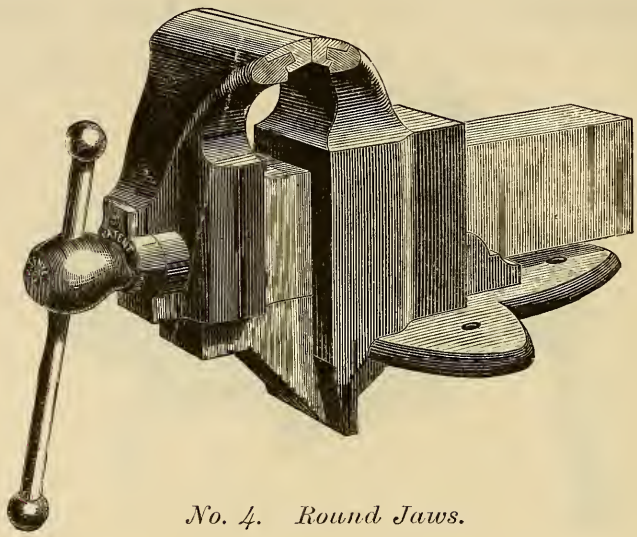


No. 3. Round Jaws.

Length of Jaws.....4¾ in. Weight.....59½ pounds.

Price.....$12 50

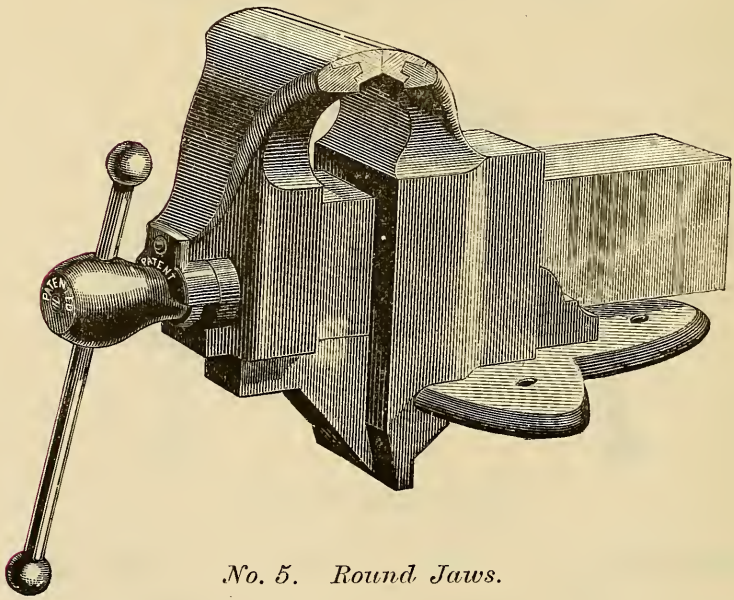
PARKER'S PAT. PARALLEL VISES.



No. 4. Round Jaws.

Length of Jaws.....5⅜ in. Weight.....83 pounds.

Price.....$17 00

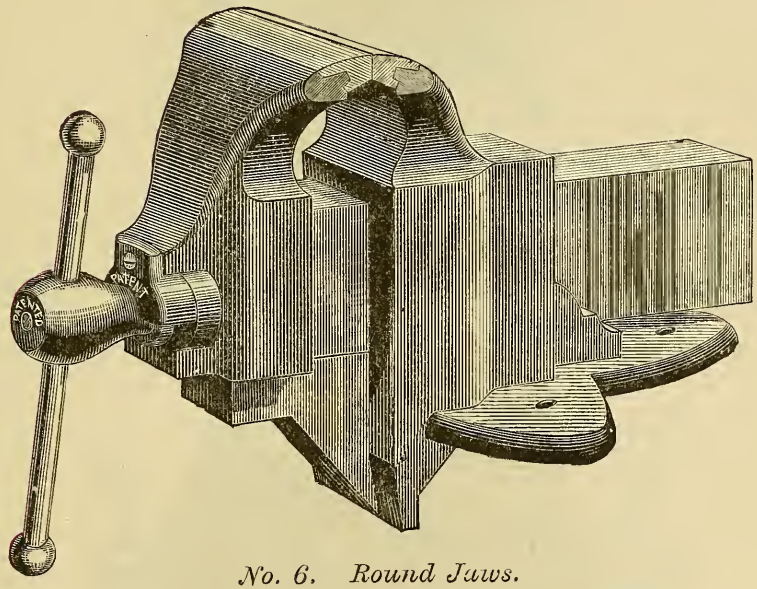


No. 5. Round Jaws.

Length of Jaws.....6⅛ in. Weight.....120 pounds.

Price.....$25 00

PARKER'S PAT. PARALLEL VISES.



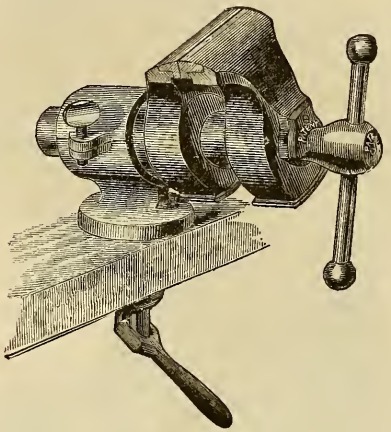
No. 6. Round Jaws.

Length of Jaws.....8⅛ in. Weight.....237 pounds.

Price $50 00

All of the foregoing Parallel Vises are made with Parker's improvements, making them strong and durable in all their parts.

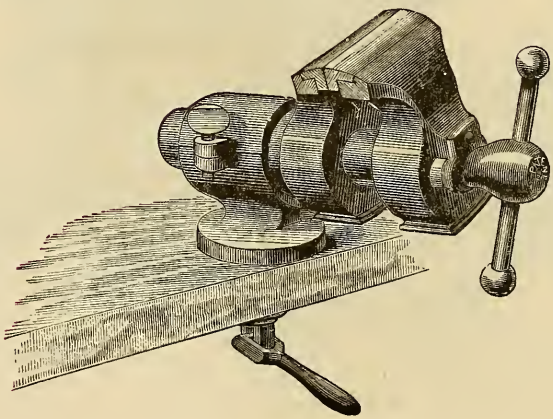
PARKER'S PATENT ROUND SLIDE, DOUBLE SWIVEL VISES.



No. 10. Round Slide.

Length of Jaws.....2¼ in. Weight.....8 pounds.

Price.....$5 50

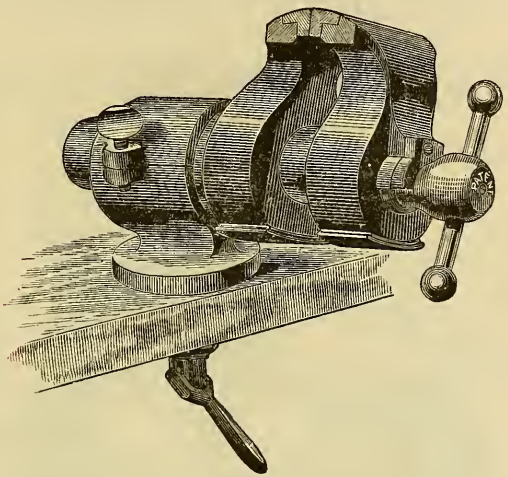


No. 11. Round Slide.

Length of Jaws.....3⅛ in. Weight.....24 pounds.

Price.....$8 50

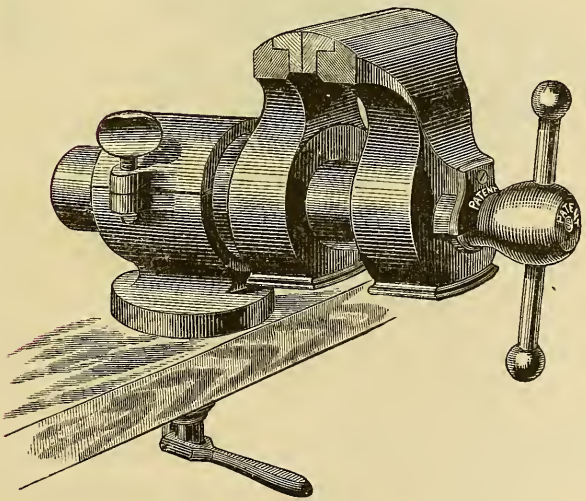
PARKER'S PATENT ROUND SLIDE, DOUBLE SWIVEL VISES.



No. 12. Round Slide.

Length of Jaws.....3⅝ in. Weight.....33 pounds.

Price.....$10 25

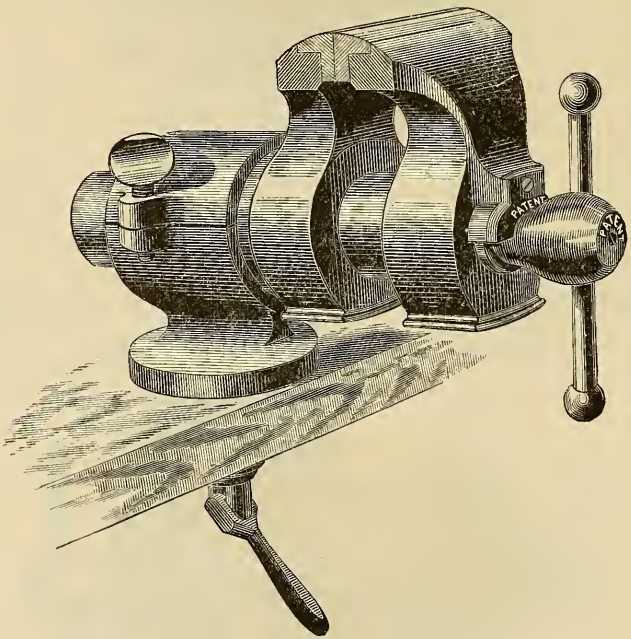


No. 13. Round Slide.

Length of Jaws.....4⅛ in. Weight.....54 pounds.

Price.....$12 75

PARKER'S PATENT ROUND SLIDE DOUBLE SWIVEL VISES.



No. 14. Round Slide.

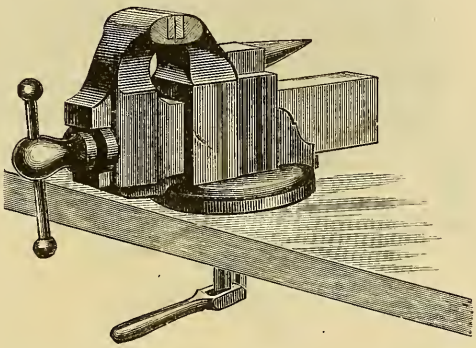
Length of Jaws.....4¾ in. Weight.....72 pounds.

Price.....$16 00

The Round Slide, Double Swivel Vises are very desirable for Machinists' use, as it can be swiveled on the bench, and Jaws can also be brought to any angle desired by means of a Set-screw on the side of the cylinder or barrel of the Vises.

PARKER'S

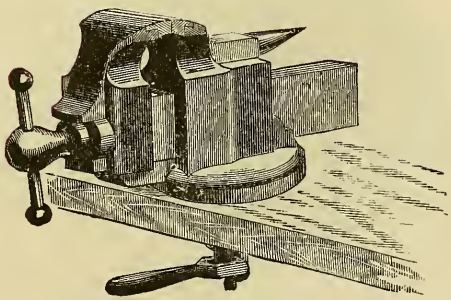
PATENT PARALLEL SWIVEL VISES.



No. 19. Round Jaw, Swivel Base.

Length of Jaws..... 1¾ in. Weight..... 7½ pounds.

Price $4 25



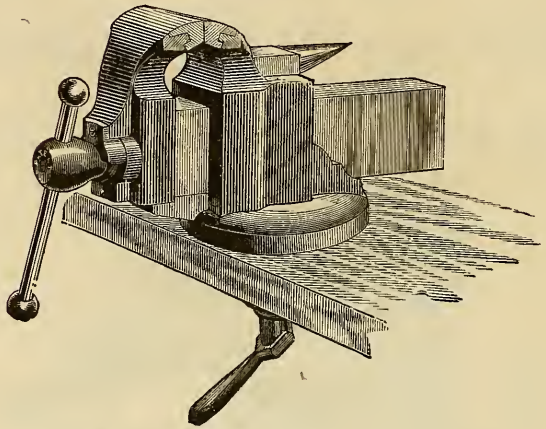
No. 20. Round Jaw, Swivel Base.

Length of Jaws..... 2¼ in. Weight..... 8½ pounds.

Price $5 25

These Swivel Vises, with the exception of Nos. 23 and 24, have Parker's Patent Cast Steel Anvil.

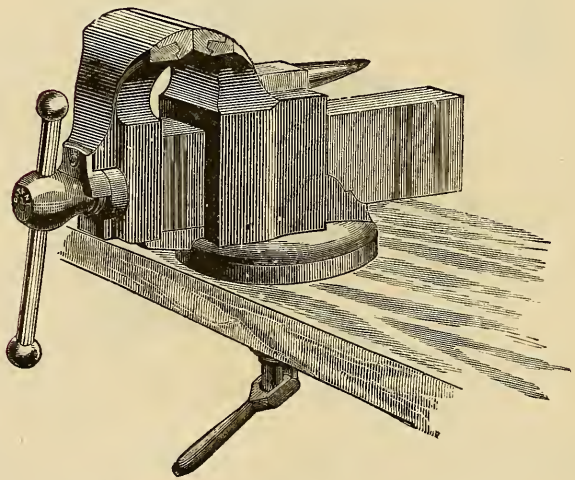
PARKER'S PARALLEL SWIVEL VISE.



No. 21. Round Jaws, Swivel Base.

Length of Jaws.....3⅛ in. Weight.....23 pounds.

Price $7 50

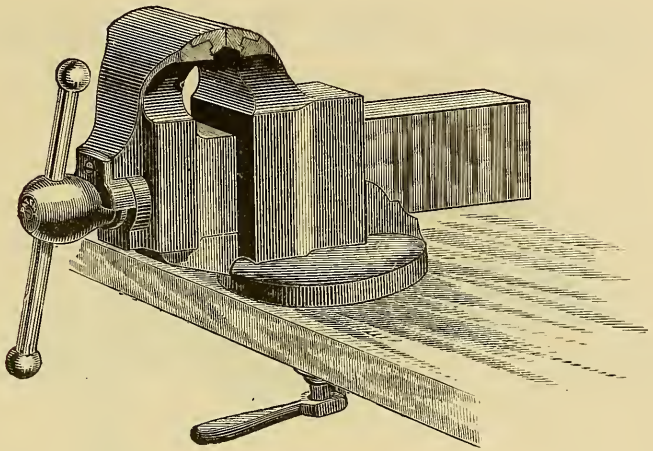


No. 22. Round Jaws, Swivel Base.

Length of Jaws.....3⅝ in. Weight.....35 pounds.

Price $9 50

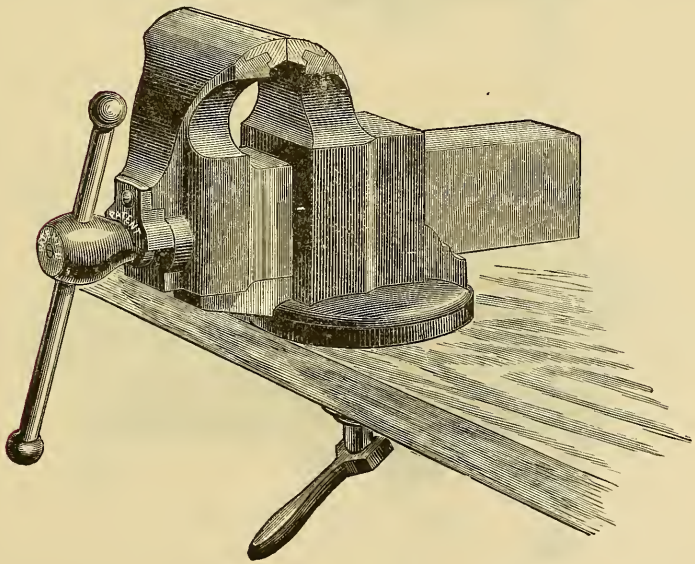
PARKER'S PARALLEL SWIVEL VISES.



No. 23. Round Jaws, Swivel Base.

Length of Jaws.....4¼ in. Weight.....48 pounds.

Price.....$11 75



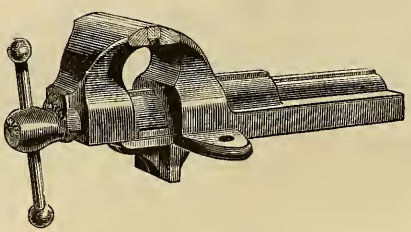
No. 24. Round Jaws, Swivel Base.

Length of Jaws.....4¾ in. Weight.....63½ pounds.

Price.....$15 25

PARKER'S

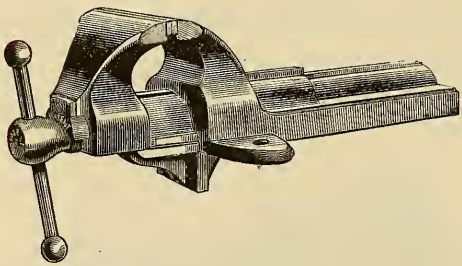
PATENT OVAL SLIDE VISES.



No. 30. Round Jaws.

Length of Jaws.....2⅝ in. Weight.....8½ pounds.

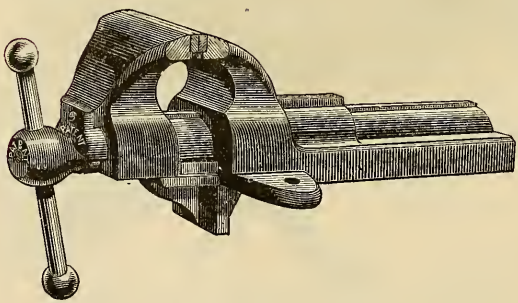
Price.....$2 75



No. 31. Round Jaws.

Length of Jaws.....3 in. Weight.....13 pounds.

Price.....$3 25



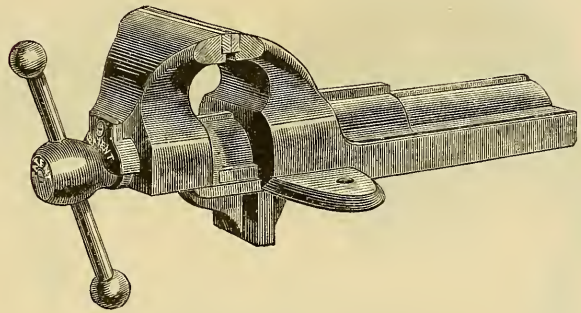
No. 32. Round Jaws.

Length of Jaws.....3¼ in. Weight.....19 pounds.

Price.....$4 50

PARKER'S

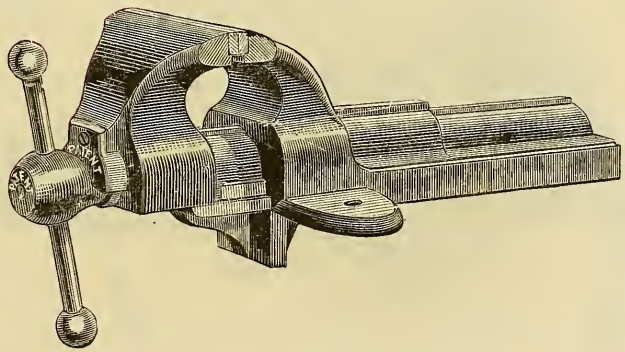
PATENT OVAL SLIDE VISES.



No. 33. Round Jaws.

Length of Jaws.....3½ in. Weight.....22 pounds.

Price.....$5 25

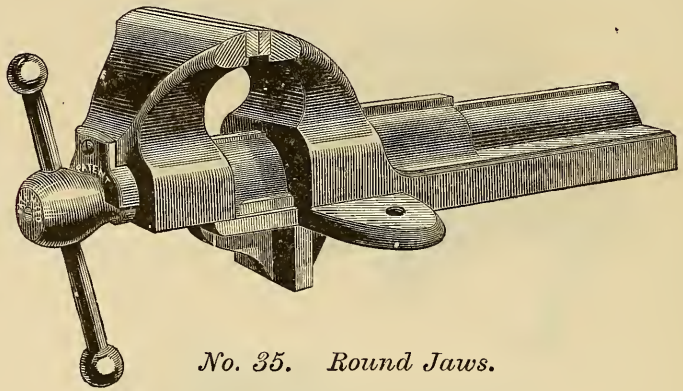


No. 34. Round Jaws.

Length of Jaws.....4 in. Weight.....24 pounds.

Price.....$7 00

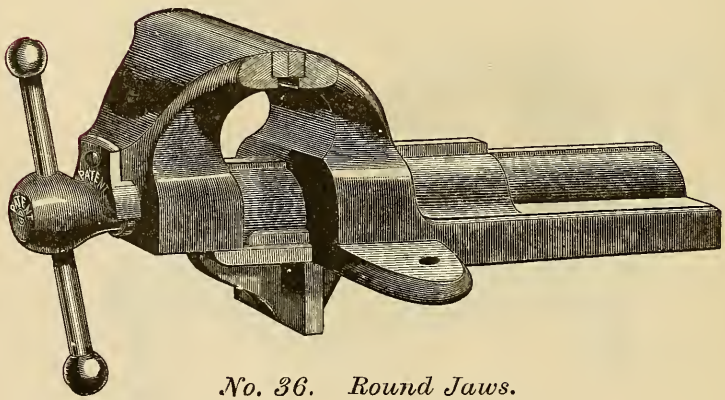
PARKER'S PAT. OVAL SLIDE VISES.



No. 35. Round Jaws.

Length of Jaws.....4½ in. Weight.....35 pounds.

Price.....$10 25

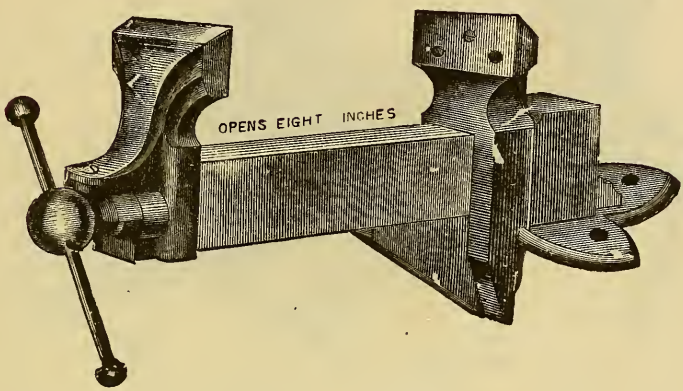


No. 36. Round Jaws.

Length of Jaws.....5 in. Weight.....59 pounds.

Price.....$13 00

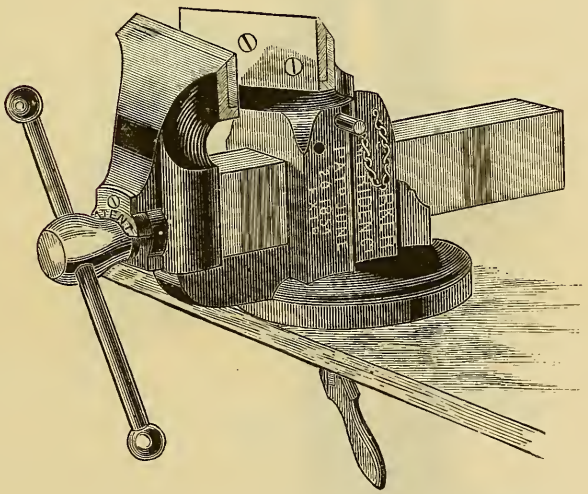
PARKER'S
PATENT COACH MAKER'S VISES.



No. 40. Parallel.

Length of Jaws.....4 in. Opens.....8 in.

Price.....$10 75

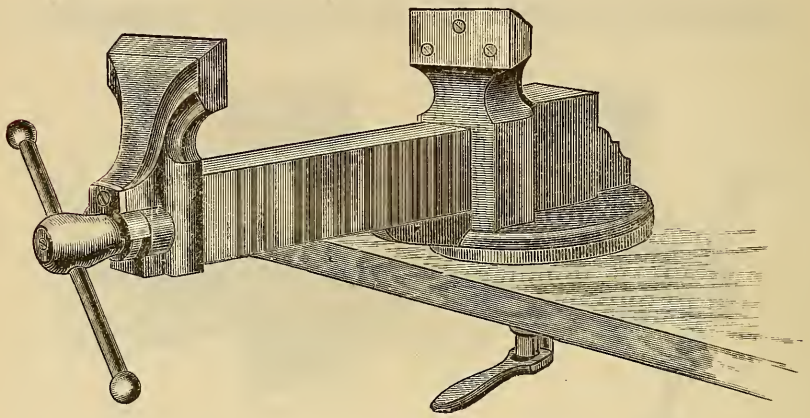


No. 41. Swivel Jaw, Swivel Base.

Length of Jaws.....4½ in. Opens.....9 in.

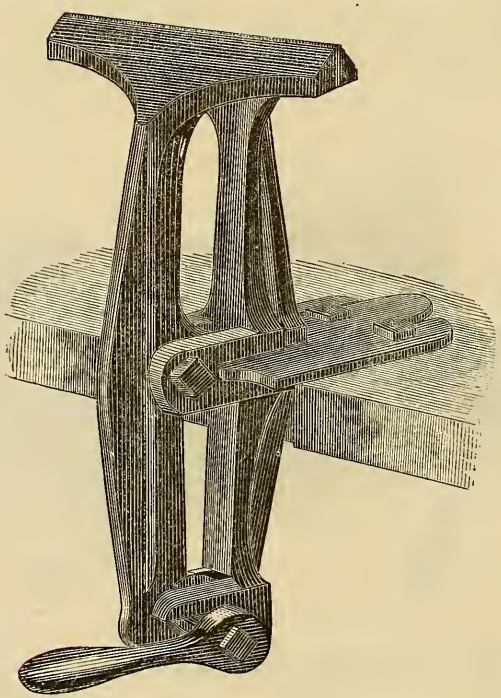
Price.....$15 00

PARKER'S
PATENT COACH MAKER'S VISE.



No. 46. Swivel Base.

Length of Jaws.....4 in. Opens.....8 in.
Price.....$13 00

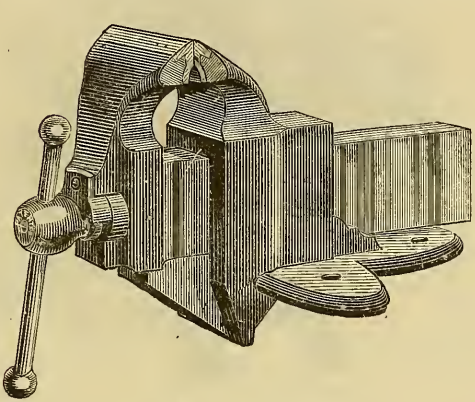


No. 43. Saw Filer's Vise.

Length of Jaws.....9 in. Price.....$4 25
The Jaws are faced with leather, being made expressly for Saw Filing.

PARKER'S

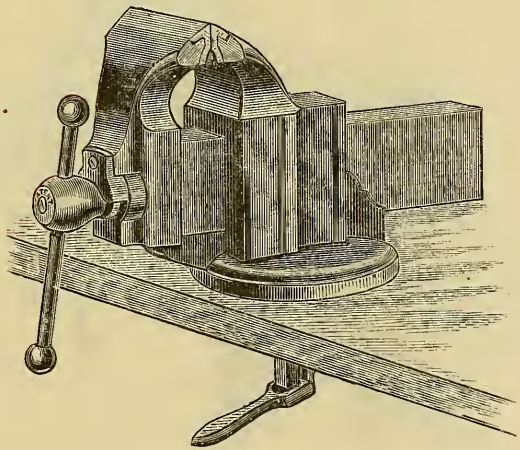
PATENT PARALLEL FILER'S VISES.



No. 42. Parallel.

Length of Jaws ..... 4 in. Weight ..... 33 pounds.

Price $8 00

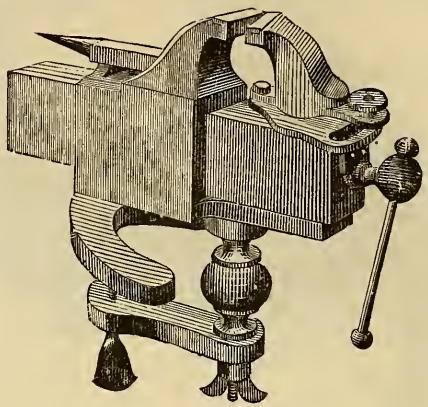


No. 44. Parallel—Swivel Base.

Length of Jaws ..... 4 in. Weight ..... 37 pounds.

Price $9 50

PARKER'S PATENT JEWELER'S VISE.

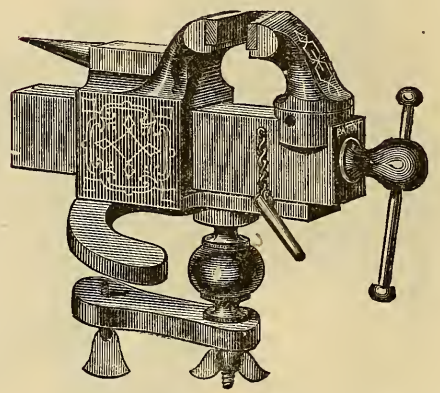


No. 45. Swivel Jaw and Cast Steel Anvil.

Length of Jaws, 1¾ in.

Price $6 25

Ornamented in Bronze and Vermilion.



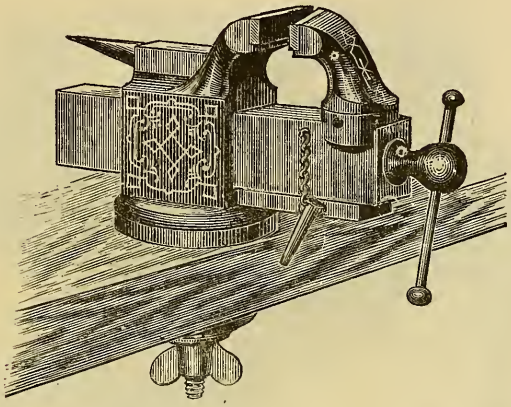
No. 48. Swivel Jaw and Cast Steel Anvil.

Length of Jaws, 1¾ in.

Price $7 25

Ornamented in Bronze and Vermilion.

PARKER'S PATENT JEWELER'S VISE.

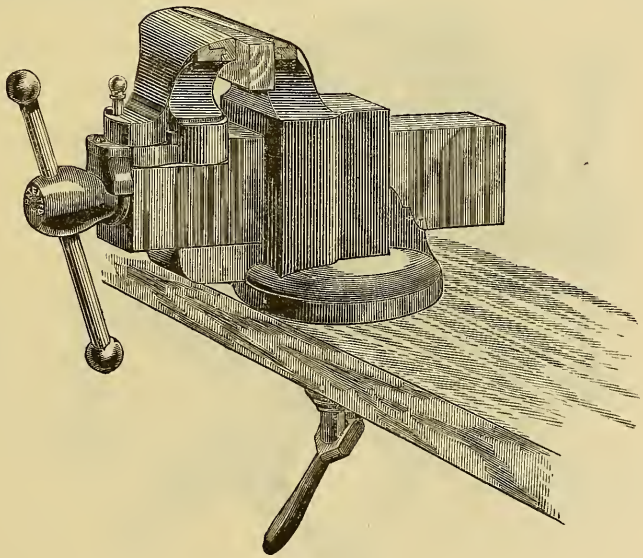


No. 49. Swivel Jaw and Cast Steel Anvil.

Length of Jaws..... 1¾ in. Price..... $7 50

Ornamented in Bronze and Vermilion.

PARKER'S PAT. SWIVEL JAW VISES.



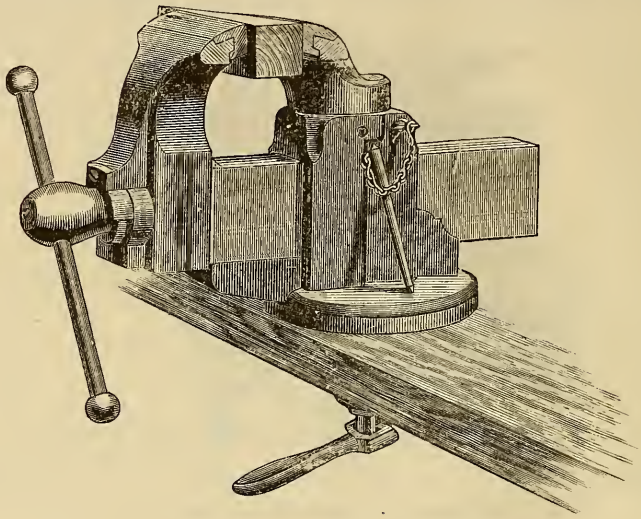
No. 50. Round Jaws, Swivel Base.

Length of Jaws..... 3⅝ in. Weight..... 46 pounds.

Price..... $11 25

Front Jaw Swivels.

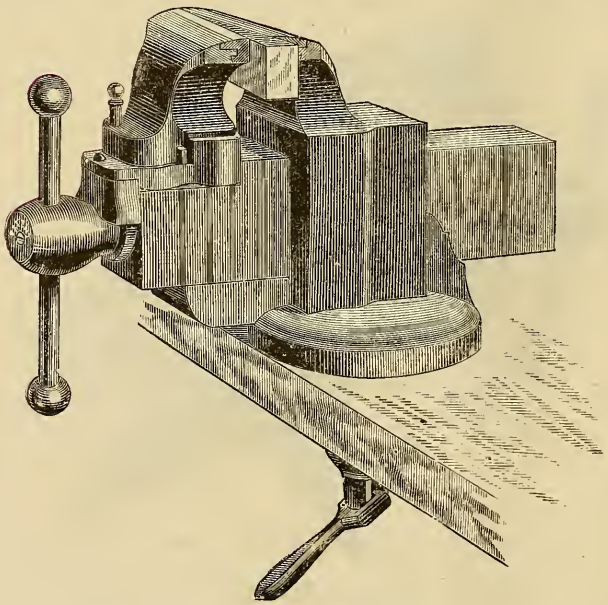
PARKER'S PAT. SWIVEL JAW VISES.



No. 51. Round Jaws, Back Jaw Swivels.

Length of Jaws, 4½ in. Weight, 58 pounds.

Price $13 50



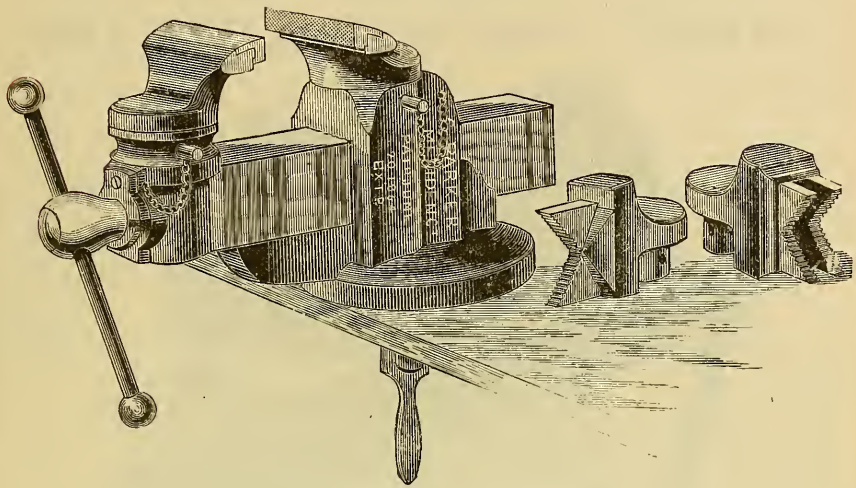
No. 52. Round Jaws, Front Jaw Swivels.

Length of Jaws, 4⅛ in. Weight, 62 pounds.

Price $14 00

Nos. 50, 51 and 52 Swivel on the Bench.

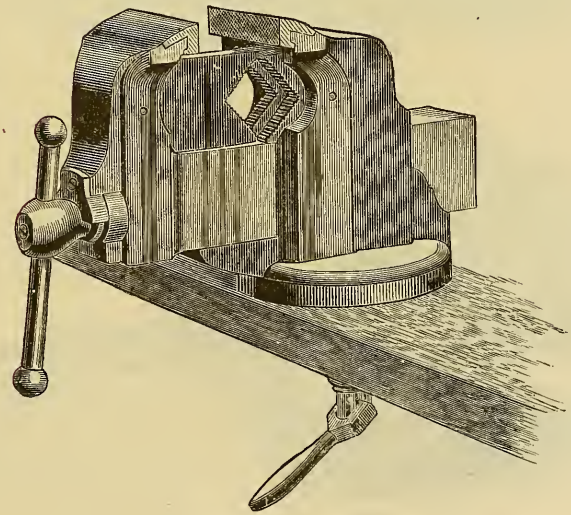
PARKER'S PATENT PIPERS' VISES.



No. 86. With interchangeable Jaws.

No. 81.	Round Jaws. Both Jaws Swivel	Weight, 60 lbs.		$13 50
82.	Pipers' Jaws	"	63	13 50
86.	Round and Pipers' Jaws	"	76	15 50

For holding 3 in. Pipe and under.

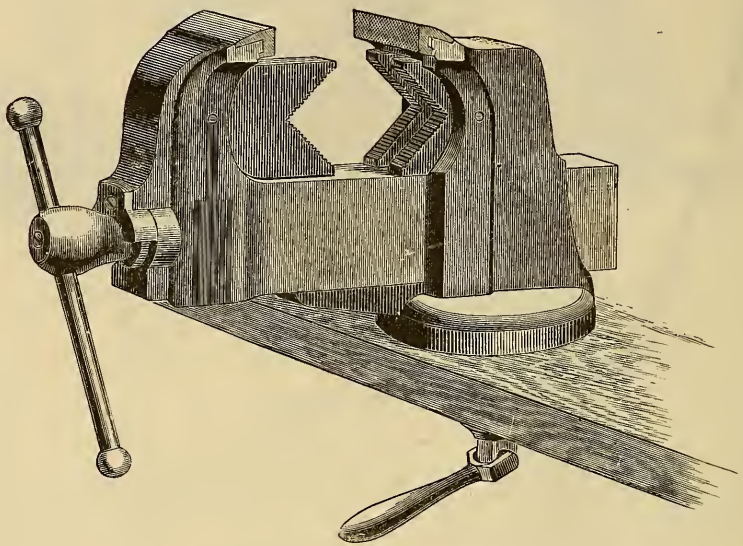


No. 87. Patent Combination Pipe Vise.

Round and Pipers' Jaws. Weight, 41 lbs. Holds 2 in. Pipe and under.

Price $13 50

PARKER'S
PATENT COMBINATION PIPE VISE.

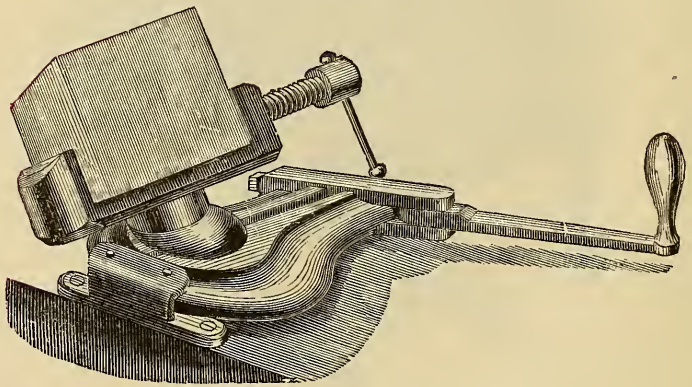


No. 88. Round Jaws.

With Pipers' Jaws. Weight, 59 pounds.

Price.....$15 50

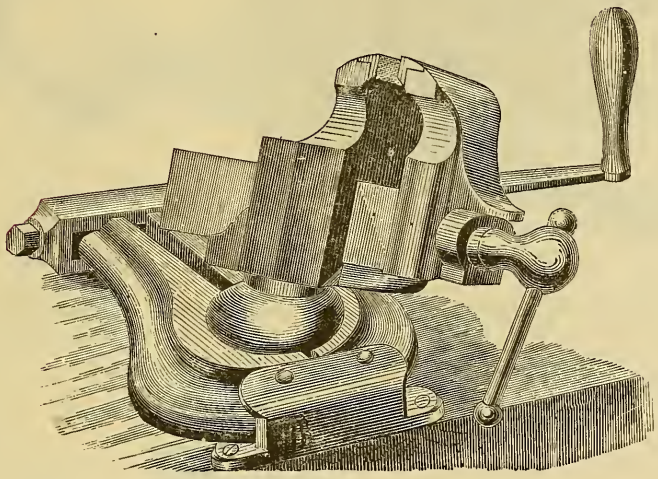
Holds 3 in. Pipe and under.



Die Sinker's Adjustable Vise.

Suitable for every variety of work and Dies; is operated by means of a lever, and can be adjusted in an instant to any required angle, and held so firm that the force of a heavy blow will not move it.

DIE-SINKER'S ADJUSTABLE VISE.



No. 1.	Parallel Vise, with Ball Attachment	$12 00
2.	" " "	14 00

The above cut represents a common Bench Vise, with the Ball Attachment. It is very convenient for Filing Mills, Reamers, Drills, etc., as it can be set in an instant so as to get the required light on the work.

DIRECTIONS FOR SETTING UP THE VISE:

Cut a hole or nest into the bench of sufficient size for the ball to revolve in without hitting in the center. Bore an inch hole through the bench to let the chips through; set the front of the Vise even with the edge of the bench; oil the joints, and the Vise is ready for use. If the Vise is too loose, turn up the Set-screw in the Clasp.

HALL'S
PATENT SUDDEN GRIP VISE.

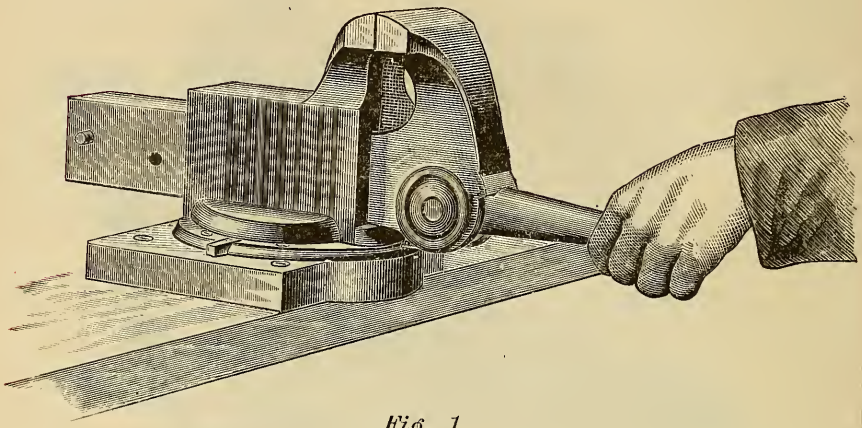


Fig. 1.

Is a perspective view of the Vise, showing the position of the handle when ready to open the Vise.

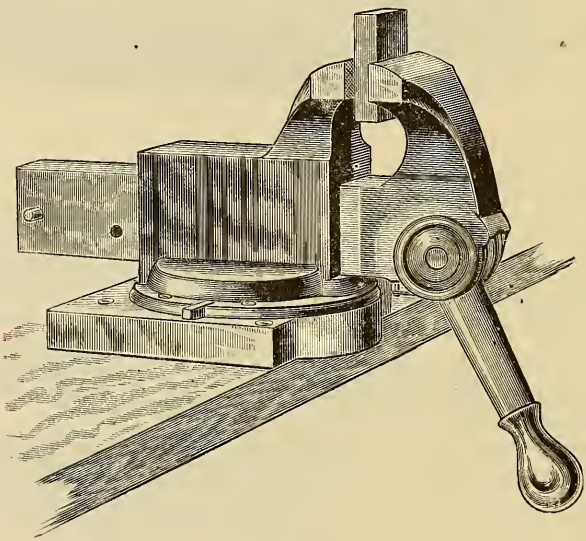


Fig. 2.

Is a perspective view of the Vise, showing the position of the handle when the jaws securely grasp the work.

Price $14 00

PARKER'S

PARALLEL AND SWIVEL VISES,

WITHOUT PARKER'S IMPROVEMENTS.

PRICE LIST.

Parallel Vises.

NO.	LENGTH OF JAW.	WEIGHT.	PRICE EACH.
0000	3¼ in.	23 lbs.	$5 50
100	3⅝	31½	6 50
200	4¼	41½	8 50
300	4¾	59½	10 75
400	5⅜	83	16 00
500	6⅛	120	23 75
4000	4	opens 8 inches, Coach Vise	10 00

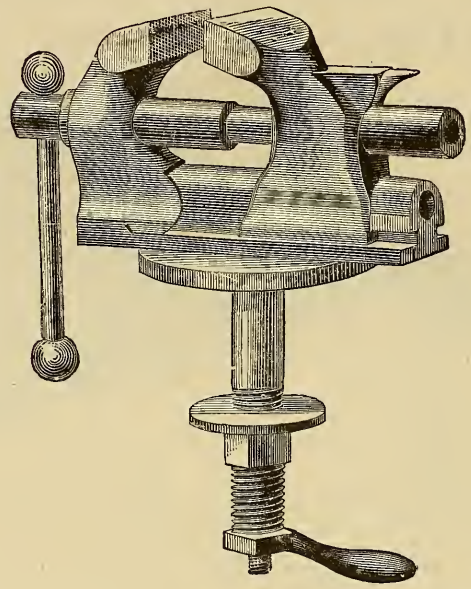
Swivel Vises.

NO.	LENGTH OF JAW.	WEIGHT.	PRICE EACH.
2000	2¼ in.	8½ lbs.	$4 00
2100	3⅛	23	6 25
2200	3⅝	35	8 00
2300	4¼	48	10 00
2400	4¾	63½	13 25
4600	4	opens 8 inches, Coach Vise	12 50

As there has been put upon the market a Vise in imitation of Parker's genuine, the above list of numbers and corresponding length of jaws will be furnished, but they do not have the Wrought Iron Strengthener, or any of Parker's patented improvements. These Vises are all painted green, to distinguish them from Parker's regular Vises.

A full line of above kept in stock.

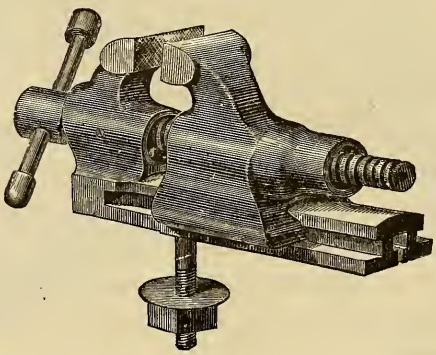
COMBINED UNION AND BACKUS VISES.



Heavy Chipping Vise, with Covered Screw.

Width of Jaw	1½	1¾	2	2½	3	3½	4	4½	5	6	7	in.
Weight	3½	5	9	22	39	47	56	67	75	116	169	lbs.
Without Iron Seat,	$3.00	3.50	4.00	5.50	7.00	9.00	10.00	12.50	17.00	25.00	30.00	
With "		3.50	4.00	4.50	6.25	8.00	10.00	11.25	14.00	18.75	27.00	No Seat.

All Vises, except the 7 in., sent with Seats, unless otherwise ordered.

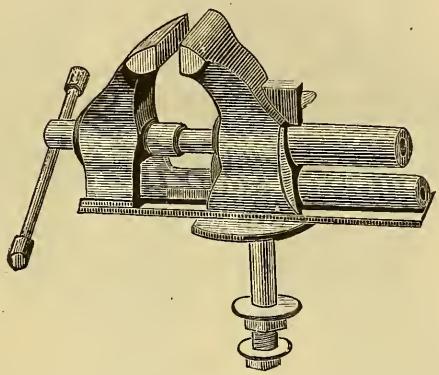


Heavy Chipping Vise, Uncovered Screw.

Jaws Length.....7 in. Weight.....169 pounds.

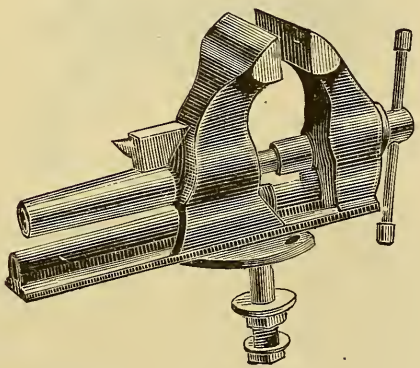
These 7-in. Vises are of the old Union Pattern. The demand for them has been very large, and we have never yet known one to fail of giving entire satisfaction.

COMBINED
UNION AND BACKUS VISES.



Finishing Vise.

Width of Jaw	3	4	5	in.
Weight	24	42	60	pounds.
Without Iron Seat	$6 50	$9 00	$14 50	
With "	7 00	10 25	16 25	

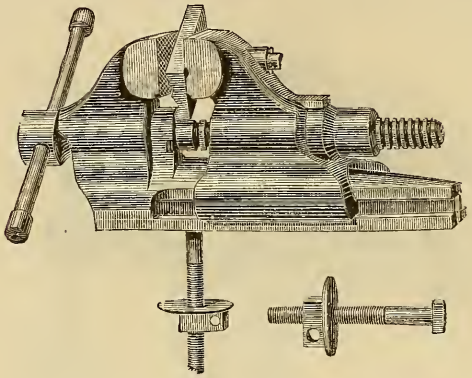


Coachmaker's Vise.

Without Iron Seat	$10 00
With "	11 25

This Vise has Smooth Jaws, and are made especially for Coachmakers' use. The width of the Jaw is 4 in. depth of the Face of Jaw, 2 in. distance from the top of Jaw to the Screw. 5 in.; Jaws open, 11 in.; weight, 52 pounds.

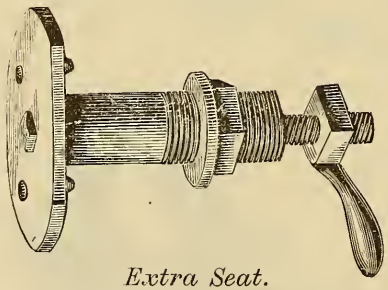
COMBINED
UNION AND BACKUS VISES.



Pipe Vise.

Width of Jaw	4	5	8	in.
Weight	57	79	153	pounds.
Price	$17 50	23 00	33 00	

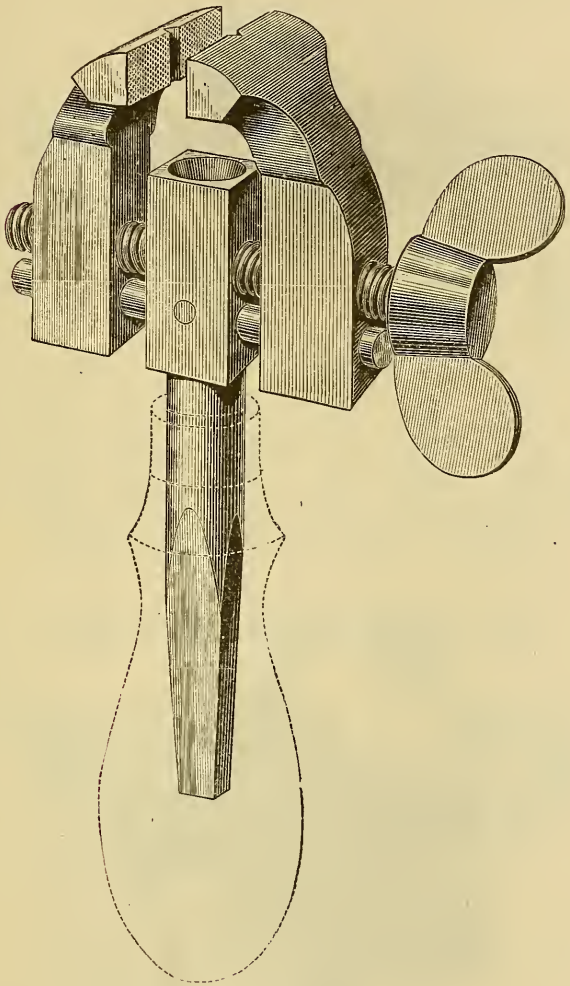
The 4 in. and 8 in. have covered Screws.



Extra Seat.

This Vise is constructed with a view of combining all the good qualities of the different Vises in use, with the peculiar advantages secured by the patents. It is a well made Vise, and easily adapted to different kinds of work. It is strong—the screw passing through the center instead of the bottom, and is entirely protected by a telescopic covering, which is the only means by which the screw can be covered without weakening the Vise, and still have the screw pass through the center. This Vise rests on a circular plate or seat of iron, having a hollow projection or hub long enough to reach through the bench, with a nut under the bench. The Vise is secured on this plate or seat by a bolt having a square head, fitting into a slot in the under side of the Vise, and passing through the plate or hub, with a hand nut on the lower end, which screws up firmly against the end of the hub. By loosening this nut the Vise may be turned on the seat to any desired angle, or may be moved backward or forward to accommodate the workman. By drawing the Vise forward to a certain point the head of the bolt will slip out of the slot, and the Vise may be moved from the bench to be used for holding the work on a planer, upright drill, or other machine; and it can be almost instantly restored to its place on the bench. The Vise is also furnished without the iron plate or seat, in which case it rests immediately on the bench, and is fastened by the bolt with the hand nut under the bench. The jaws are faced with hardened steel welded to the iron.

STEVEN'S PATENT HAND VISE.

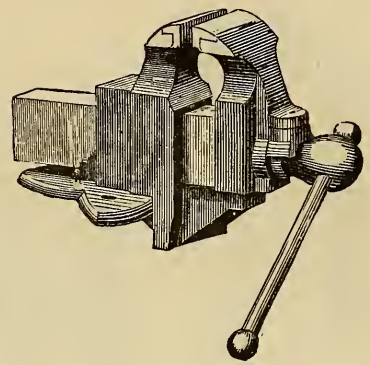


This Vise will center and hold firmly any Tool placed in it, and may be used in the hand, on a bench, lathe, or bit-stock.

The Jaws, Screw, and Cross-bar are made of tempered steel. The Handle, shown by the dotted lines, is of hard maple, and may be easily removed when the Vise is to be used in a lathe or bit-stock.

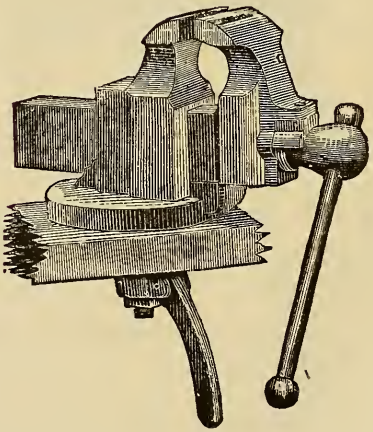
It is needed by all Mechanics, and its many uses make it a very desirable tool for any one. Price $24 00 per Dozen.

HOWARD'S PARALLEL BENCH VISE.



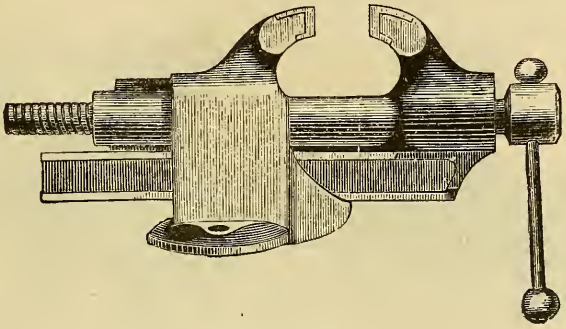
Nos.	0	1	2	3	4	5	6
Jaws Length,	3	3½	4	4½	5	6	7 in.
Weight,	23	31½	39	50	90	113	184 lbs.
Price,	$5 50	$6 50	$8 50	$10 75	$16 00	$23 75	$34 50

SWIVEL BENCH VISE.



Nos.	00	0	1	2	3	4	5	6
Jaws Length,	2	3	3½	4	4½	5	6	7 in.
Weight,	7½	29	38½	48	61	104	129	188 lbs.
Price,	$4 00	$6 25	$8 00	$10 00	$13 25	$16 50	$26 00	$36 00

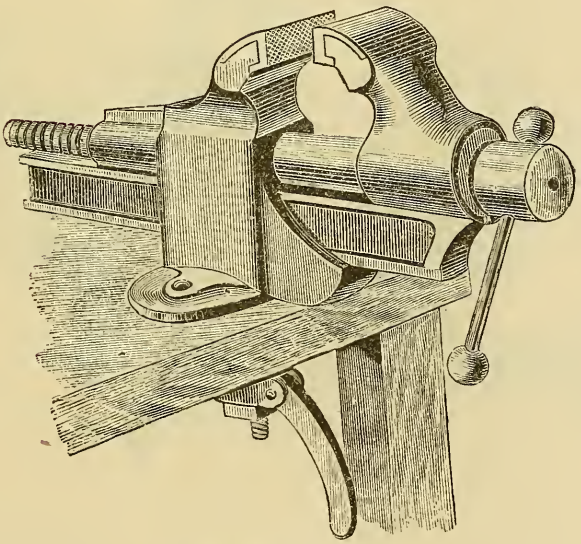
HOWARD'S PARALLEL BENCH VISE.



New Style.

Nos.	20	25	30	35	40	45	50	55	60
Jaws Length,	2	2½	3	3½	4	4½	5	5½	6 in.
Price,	$4 00	5 00	6 25	7 00	9 00	11 75	16 25	20 00	24 00

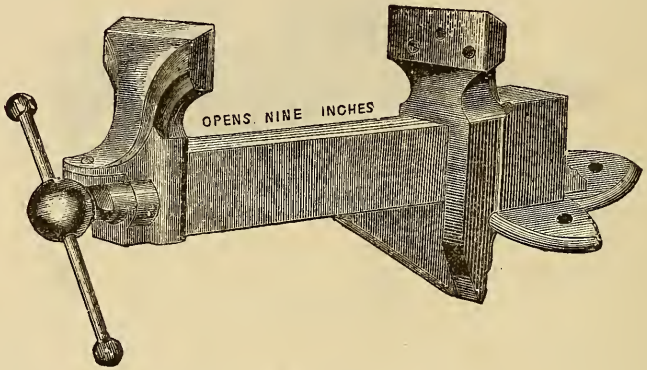
SWIVEL BENCH VISE.



New Style.

Nos.	20	25	30	35	40	45	50	55	60
Jaws Length,	2	2½	3	3½	4	4½	5	5½	6 in.
Price,	$4 50	5 75	7 00	8 25	10 75	14 00	19 25	23 50	28 50

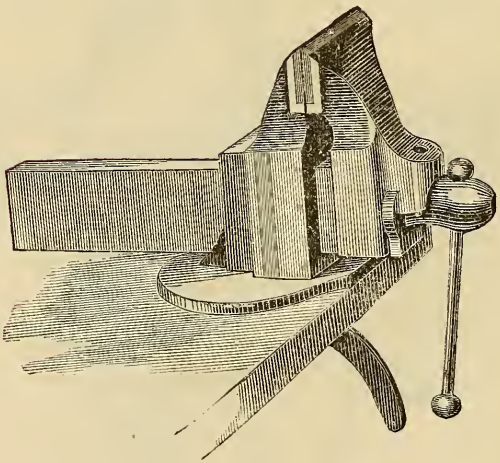
HOWARD'S COACH-MAKER'S VISES.



No. 2. Parallel.

Jaws Length, 4 in. Weight, 37½ lbs.

Price $10 00



No. 1. Swivel.

Jaws Length, 4 in. Opens 9 inches.

Price $12 50

STEPHEN'S
PATENT PARALLEL VISE.

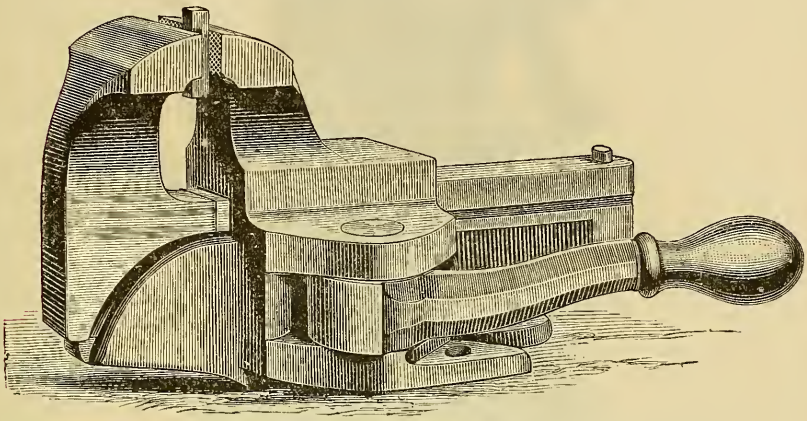


Fig. 1. Represents a Perspective View.

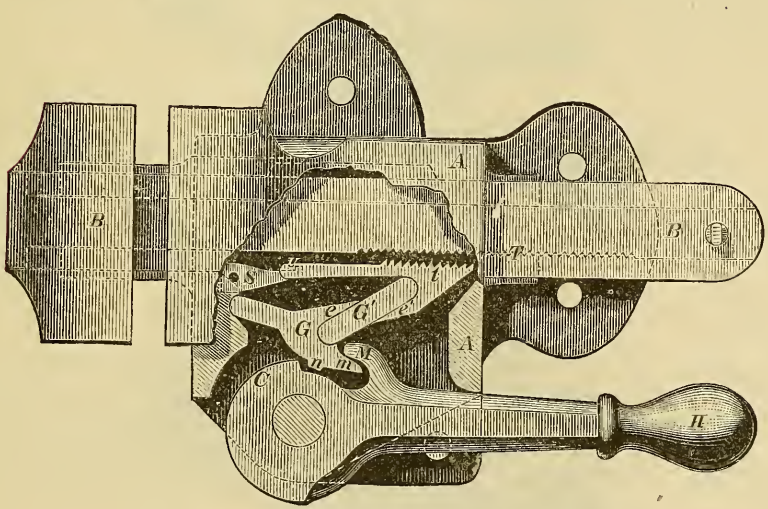


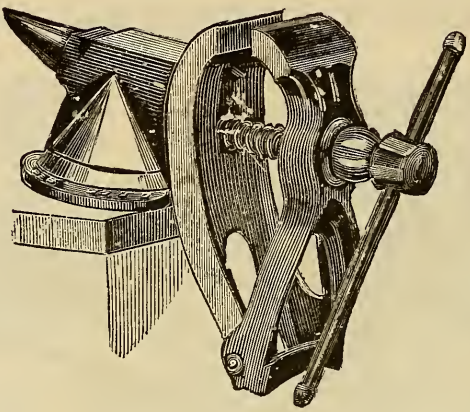
Fig. 2. Showing its Working Parts.

Jaws Length	2	2¾	3½	4½	5½	6½	in.
Opens,	2¼	3	5	6½	9	11	in.
Weight,	2	12	35	65	120	170	lbs.
Price,	$4 00	$5 50	$9 00	$12 50	$22 00	$33 00	

Each Vise can be supplied with a Taper or Adjustable Jaw attachment.

Price according to size of vise.

ANVIL AND VISE COMBINED.

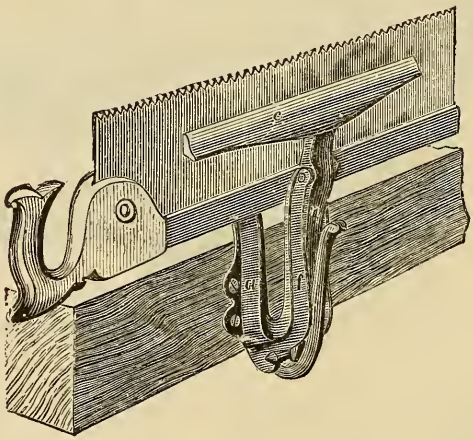


Brown's Patent.

The above gives a representation of an Anvil and Vise combined, expressly for Farmers' use. It combines strength and durability, and is well adapted for the purposes designed.

Weight, 36 lbs. Price, $5 00.

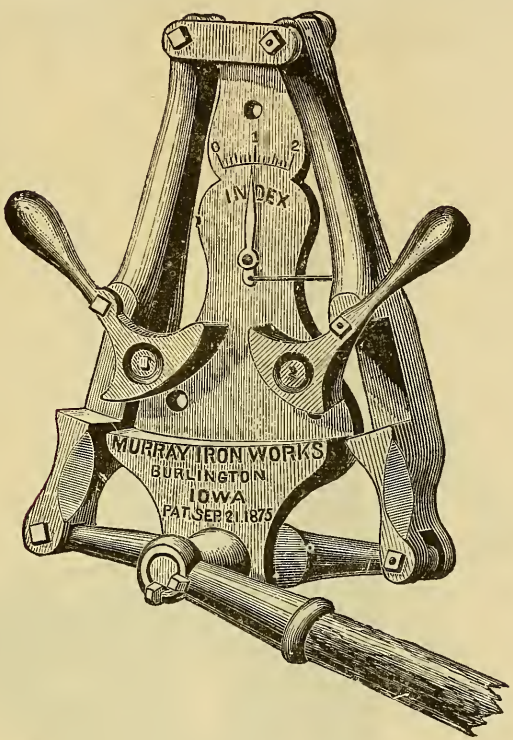
STEARN'S PATENT SAW VISE.



This is a very simple and effective device, is readily attached to a bench, and being small and light, is easily carried from place to place.

Price $24 00 per Dozen.

THE "INDEX" TIRE UPSETTER.



Hobbs' Patent.

Price $30 00

Above is a very powerful and convenient Tire Shrinker, as it can be used either right or left handed, and operated alone by man or boy, while the anvil affords the means of welding the tire or bar while in the machine—an advantage not possessed by other machines—and the shrinkage is made in the most perfect manner, leaving the iron unmarked, and the index showing the exact amount of shrinkage. It is adapted to tire of any dimension.

DIRECTIONS FOR USING.

The machine is to be bolted to a post or wall, with three bolts, as indicated by the holes in the back. With the lever turned down, (which spreads the arms apart,) throw both jaws open to receive the tire, which should rest on the arms, with the heated part upon the anvil. Bring down the jaws to hold it firmly, moving the index to "O." The tire being now in place, raise the lever until you have shortened as much as desired, which will be shown by the index.

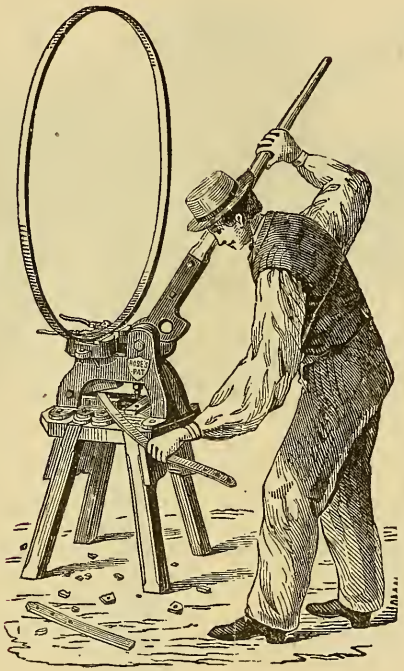
OLMSTED AND DINSMORE

TIRE UPSETTER AND COLD PUNCH.

Price $30 00

The above engraving gives a good idea of the operations of this machine. A bar can be shrunk any distance, not exceeding one inch, by one stroke of the lever. It is a very simple and strong machine. Suitable for Buggy and two-horse Wagon Tire. It has been before the public several years, and in practical operation, always giving universal satisfaction.

ROSE'S COMBINED
TIRE UPSETTER, PUNCH & SHEARS.



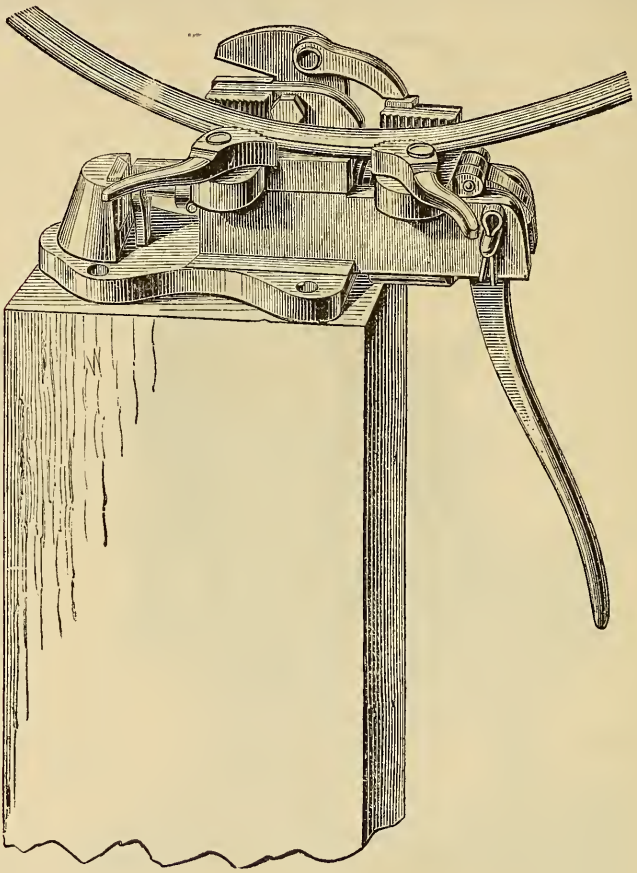
Three Combinations, each in two sizes, making Six Different Machines.

		PRICE.
No. 1.	Large Combined Machine, to upset 5 in. Tire, and cut ½ in. and punch ⅜ in. Cold Iron	$75 00
2.	Large Single Machine, to upset 5 in. Tire	50 00
3.	Large Punch and Shears, to cut ½ in. and punch ⅜ in. Cold iron	45 00
4.	Small Combined Machine, to upset 2 in. Tire, and cut ⅜ in., and punch ¼ in. Cold Iron	50 00
5.	Small Single Machine, to upset 2 in. Tire	25 00
6.	Small Punch and Shears, to cut ⅜ in. and punch ¼ in. Cold Iron	30 00

The parts of these machines are all numbered, so that duplicates can be supplied at any time.

These machines are universally recognized as first-class in every respect.

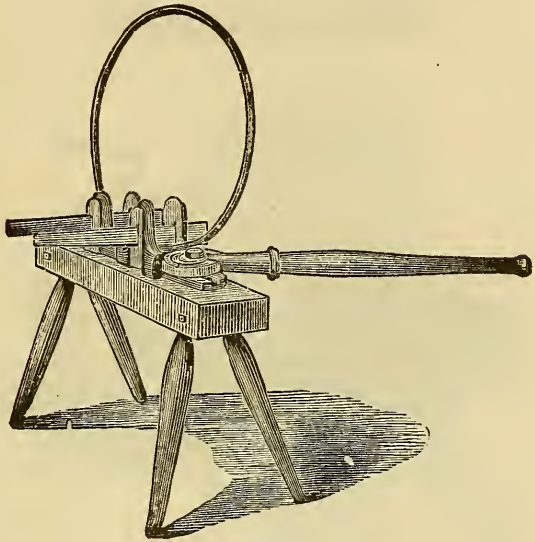
CROWELL'S COMBINED TIRE UPSETTER, PUNCH & SHEARS.



	PRICE.
Tire Upsetter, Punch and Shears, weighs 150 pounds, and is capable of shortening the heaviest wagon axle one inch at a time, punch ⅜ in. and shears ¼ in. Cold Iron	$50 00
Tire Upsetter, with Punch weighs 138 pounds, and made same as above without the Shears	35 00
Tire Upsetter, weighs 75 pounds, made same as Combined Machine, without the Punch and Shears	25 00
Punch and Shears, weighs 104 pounds, and is designed for shops who do not set Tire	35 00

All these machines are guaranteed to give perfect satisfaction.

TIRE UPSETTERS.

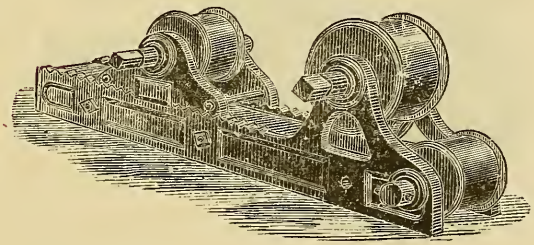


Brown's Tire Upsetter.

Price.....$15 00

Cheap, reliable, has great leverage power, and will shrink any Tire up to two inches.

TIRE BENDERS.

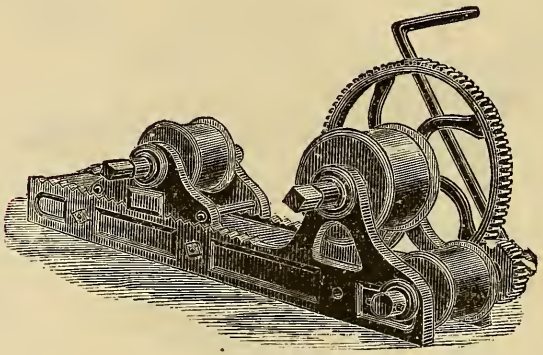


No. 1.

Length, 26 in. Length of Rollers, 3¼ in. Diameter of End Rollers, 3¼ in. Diameter of Center Rollers, 4 in.

Price.....$9 00

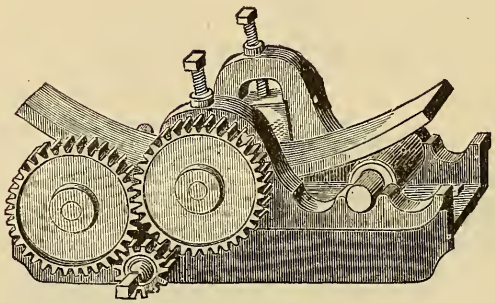
TIRE BENDERS.



No. 2.

Length, 26 inches. Length of Rollers, 3¼ inches. Diameter of End Rollers, 3¼ inches. Diameter of Centre Rollers, 4 inches. Diameter of Large Cog Wheel, 11 inches.

Price $10 50

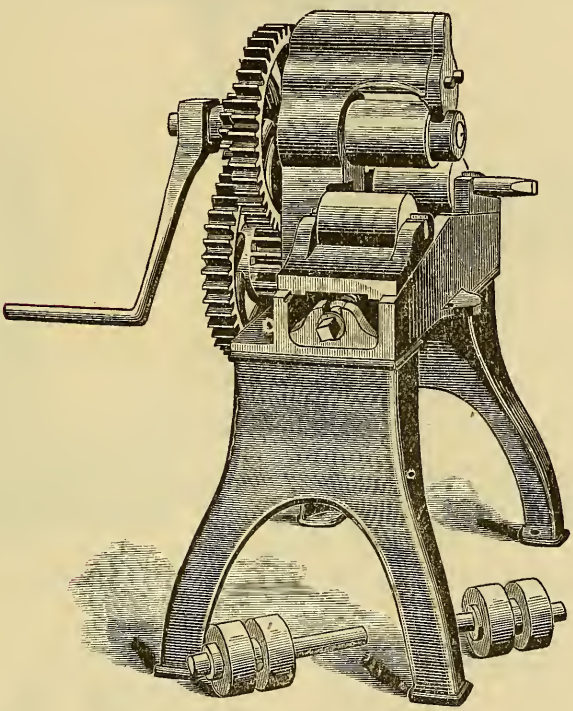


No. 3.

Length, 24 inches. Diameter of Roller, 2½ inches. Length of Roller, 5 inches.

Price $15 00

TIRE BENDER.



Worcester's Patent.

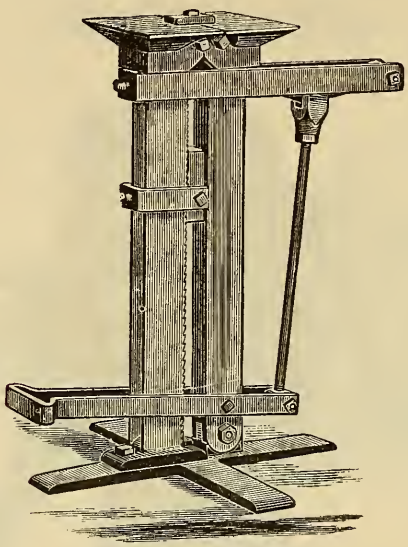
No. 1	$45 00
2	75 00

No. 1 weighs 250 pounds.
2 " 500 "

No. 1 will bend iron up to $\frac{5}{8} \times 2\frac{1}{2}$ in.
2 " " 1 $\times 4$

The No. 2 is made open on one side, so that a tire can be taken out without springing, and can be put back after welding, and trued. It is also provided with an extra pair of Rolls, with slip Collars, for bending iron edgewise. This is a machine which has long been needed, and will undoubtedly be just what many of our Carriage and Wagon Makers want for general work.

BOLT HEADING MACHINE.



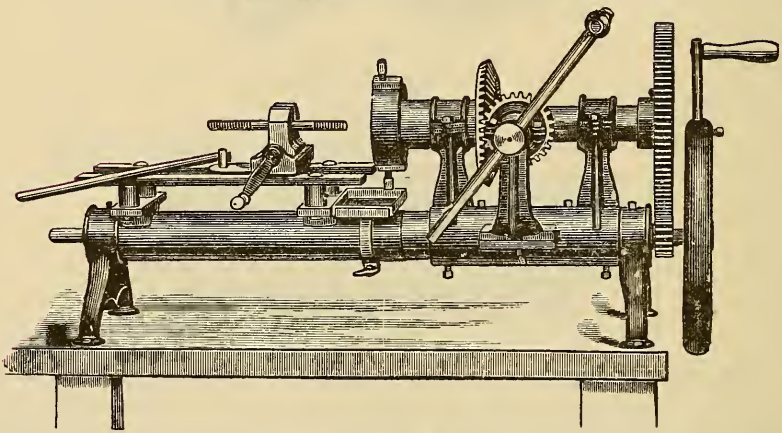
Worcester's Patent.

With Dies from $\frac{5}{16}$ to $\frac{3}{4}$ in..... $40 00

Weight, 200 pounds.

Very simple, and does away with all the *Heading Tools.*

HAND BOLT CUTTER.



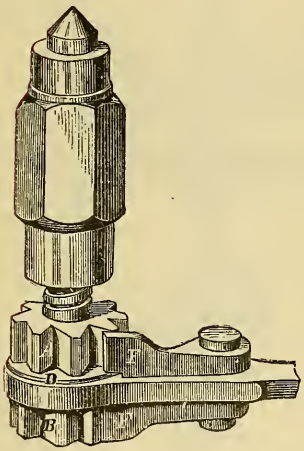
Worcester's Patent.

Price of Machine alone (Taps and Dies extra).....$50 00

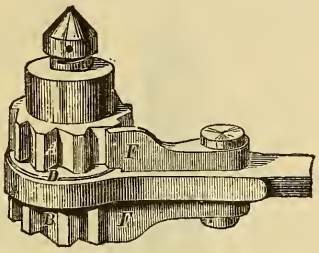
Cuts from $\frac{1}{4}$ to 1 in. inclusive.

With this Machine large Bolts can be Cut with perfect ease.

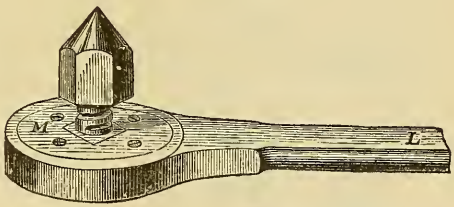
WESTON'S IMPROVED DIFFERENTIAL RATCHET DRILLS.



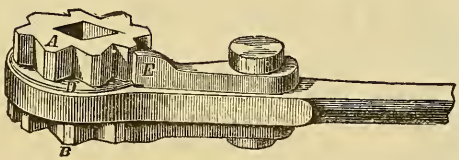
No. 1.



No. 2.



No. 3.



No. 4.

No. 1. Lengths,	12	14	16	18	20	22 in.
Price,	$8 50	$9 00	$9 75	$11 00	$11 75	$13 50

No. 2. Length, 14 in. Price, $9 00

No. 3. Length, 14 in. Price, $13 50

No. 4. Length, 18 in. Price, $9 75

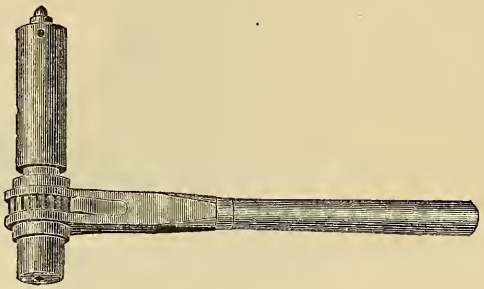
No. 1. Ordinary Drill, for general use.

No. 2. Dumpy Drill, for confined spaces.

No. 3. Locomotive Drill, convenient in cases where the Dumpy cannot be used.

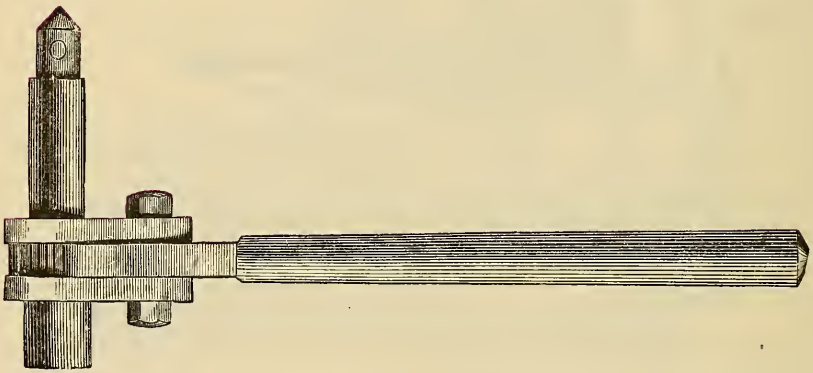
No. 4. Engineer's Ratchet Lever Drill, for boring bars, lifting jacks, and similar purposes.

PACKER'S RATCHET DRILL.



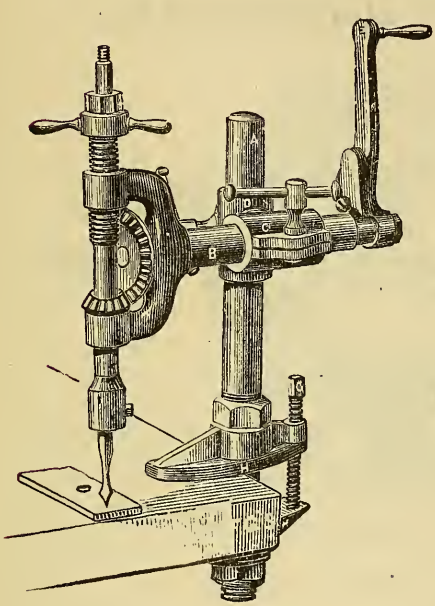
Nos.	1	2	3	4	5	
Lengths	10	12	15	17	20	in.
Price	$10 50	$13 50	$16 00	$19 00	$23 00	each.

INGERSOLL'S
PATENT RATCHET DRILL.



Nos.	1	2	3	
Length	12	16	20	in.
Price	$6 50	$8 75	$11 00	each.

ANGULAR DRILL AND BREAST DRILL.



Universal Angular Drill.

No. 1. Upright Shaft 1¼ in. in diameter, 20 in. long, weighs 26 lbs., will drill ⅝ in. hole.

Price ----------$34 00

No. 2. Upright Shaft 1½ in. in diameter 24 in. long, weighs 52 lbs., will drill ¾ in. hole.

Price ----------$38 00

No. 3. Upright Shaft 2 in. in diameter, 27 in. long, weighs 100 lbs., will drill 1¼ in. hole, geared back ⅓.

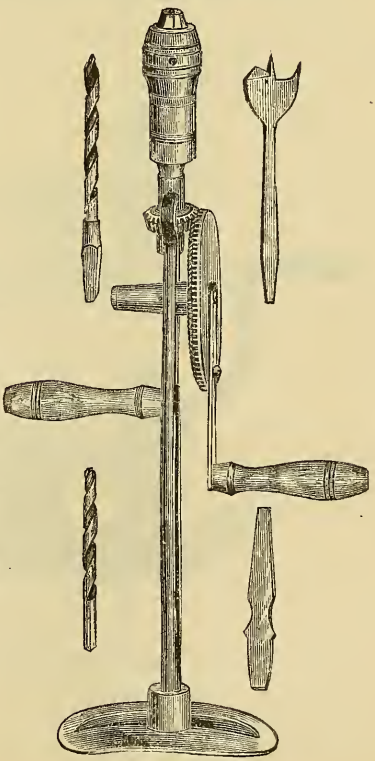
Price ----------$65 00

Millers Falls Breast Drill.

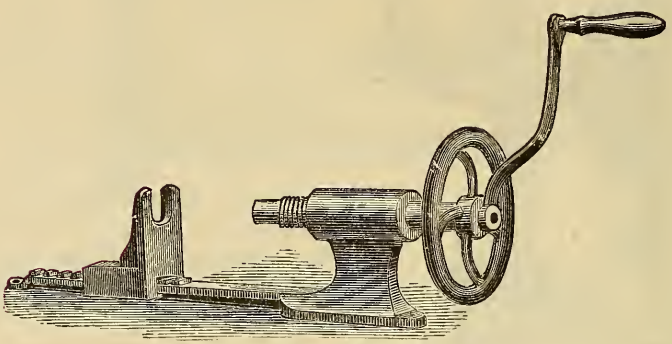
This Drill has advantages over all other Breast Drills in combining the uses of a Bit-Brace. The Chuck is a very ingenious piece of work, so made as to hold perfectly round, square or flat Tool Shanks from $\frac{1}{16}$ in. to ½ in. The jaws are made of steel, and will hold any shape tang. Every carriage and wagon manufacturer should not be without one of these very useful tools in his workshop.

Price ----------$2 50

For Breast Drill only, without the tools.



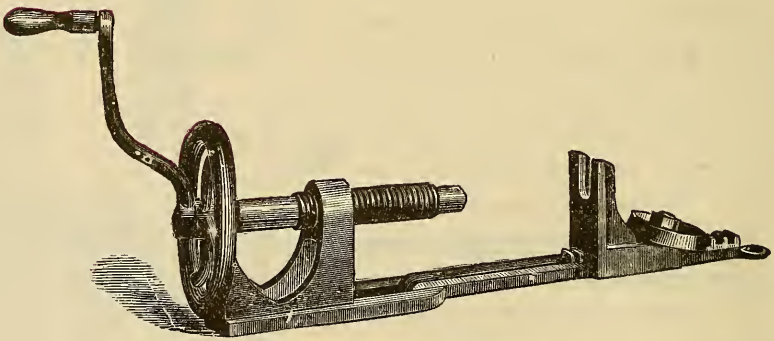
BLACKSMITH'S HORIZONTAL DRILLS.



No. 1. Solid Standard.

Length, 26 inches. Weight, 27 pounds.

Price..... $4 00



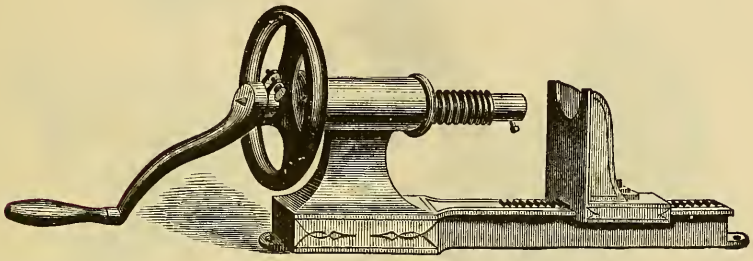
No. 2. Ordinary Pattern.

Length, 28 inches. Weight, 26 pounds.

Price..... $3 50

BLACKSMITH'S HORIZONTAL DRILLS.

WORCESTER'S PATENT.

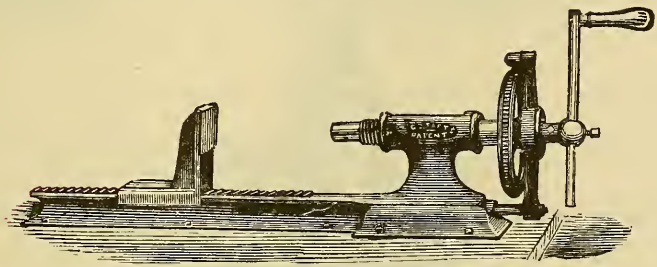


No. 3. Solid Standard.

Length, 26 in. Weight, 33 pounds.

Can be furnished with or without the *Friction Feed.*

Price, with Feed	$7 00
" without Feed	6 00



No. 4. Solid Standard and Self Feed.

Length, 33 in. Weight, 45 pounds.

Can be furnished with or without Balance Wheel.

Price, with Balance Wheel	$13 00
" without "	10 00

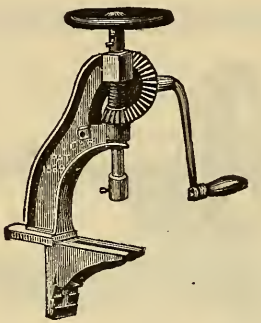
No. 5. Same Style.

Length, 44 in. Weight, 95 pounds.

Can be furnished with or without Balance Wheel.

Price, with Balance Wheel	$20 00
" without "	17 00

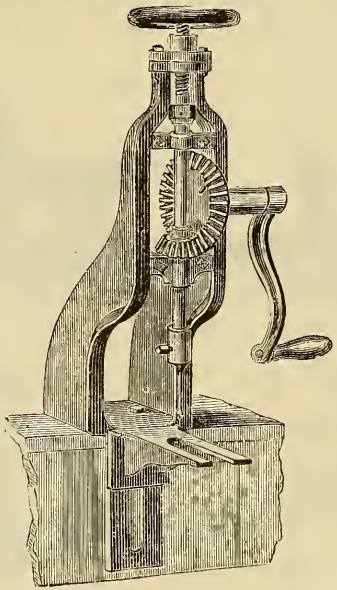
BLACKSMITH'S UPRIGHT DRILLS.



Coe's Patent.

Price.....$12 00

This Drill is without self-feed or vise attachment.



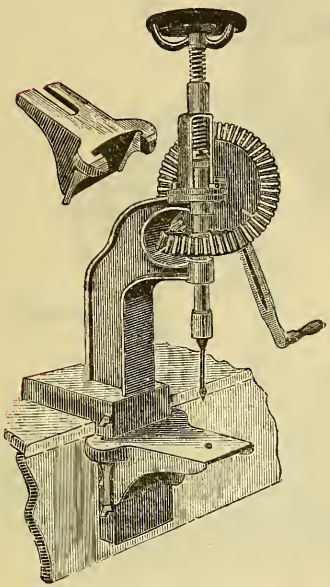
Morlan's Patent.

Price.....$15 00

" with clamp for holding work 17 00

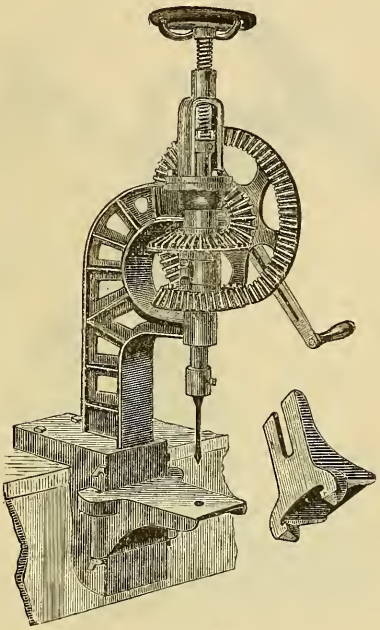
Above has two standards, giving it strength, and is adapted to drill up to one inch.

BLACKSMITH'S UPRIGHT DRILLS.



No. 1.

Price..... $15 00



No. 2.

Price..... $25 00

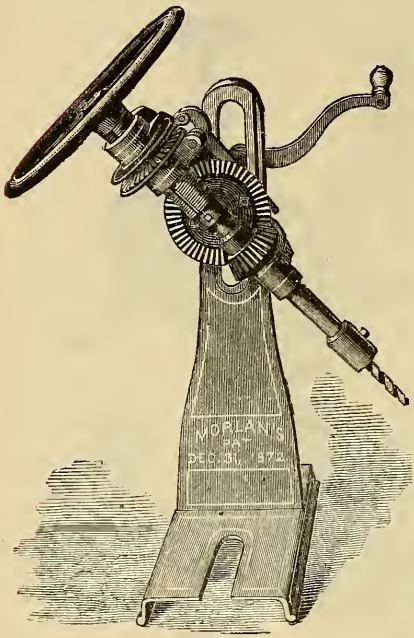
The above Drills are new competitors for public favor, with all assurance that they will meet the requirements of those who may chance to use them.

It is a settled principle among mechanics, that the balance wheel assists in maintaining the motion where the resistance is irregular, and this object is attained only in proportion to the momentum acquired; and in view of these facts, no power can be obtained from the balance wheel that is not imparted to it, either by hand or power, but in the above Drilling Machines the balance wheel is done away with, and so constructed as to require less power to operate them. They are made with adjustable cranks, and an ingenious device for holding the table in position, which can be changed with ease, and without the annoyance of removing nuts and screws, and other devices used for that purpose.

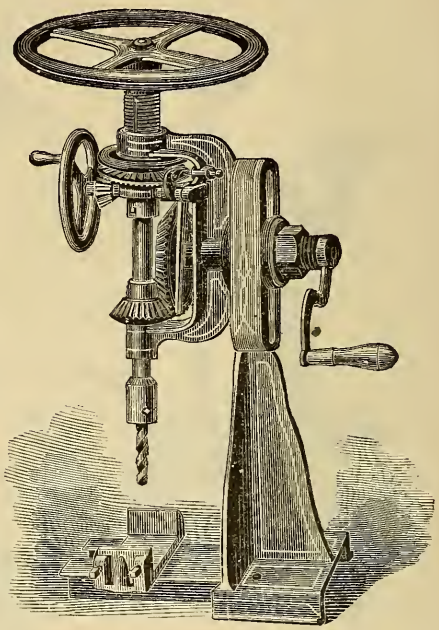
No. 1 is single geared and sufficient capacity for ordinary work.

No. 2 has a double geared driving wheel, with two pinion wheels on the mandrel, so arranged that the operator can get fast motion or slow, as desirable for his work.

UPRIGHT BENCH DRILLS.



No. 1.



No. 2.

Morlan's Patent.

No. 1. Front view at an angle.

No. 2. Side view showing new hand wheel.

No. 1.		$33 00
1.	With Clamp for holding work	35 00
2.		38 00
2.	With Clamp for holding work	40 00

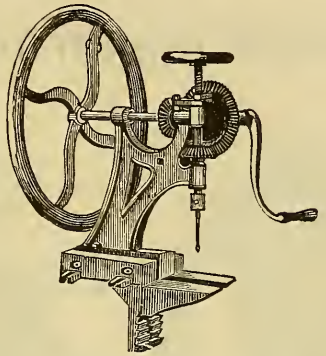
The head is readily adjusted to any desired height, and as easily turned to any angle, being firmly held at any position by tightening the large nut against the stand. The table is sufficiently narrow to be inserted between the spokes of the closest carriage wheels for drilling the tire.

The Clamp shown on the table is for holding work that cannot be held conveniently by the hand, and is planed up square so that the nicest drilling can be done with perfect accuracy.

The No. 1 Drill is adapted to all sized holes from one inch down. The No. 2 is much heavier, and is geared to give greater power for heavy work.

Both sizes are self-feeding, and are supplied with the New Hand Wheel to give a rapid reverse motion as well as for convenience when hand-feeding is desired.

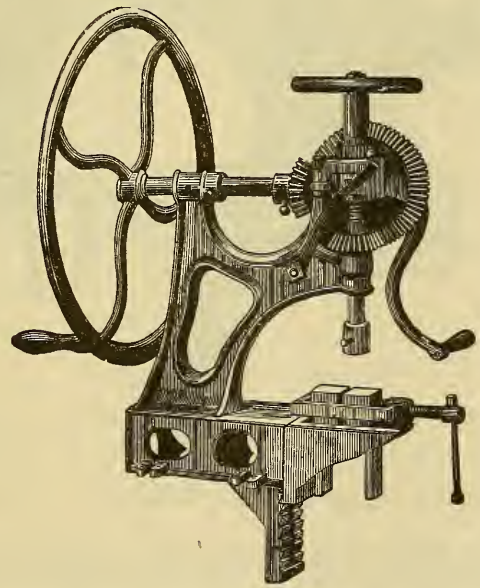
UPRIGHT BENCH DRILLS.



No. 0. Coe's Patent.

Weight.....100 pounds. Price.....$28 00

This Drill is without self-feed or vise attachment, but is suitable for all ordinary blacksmith's work.

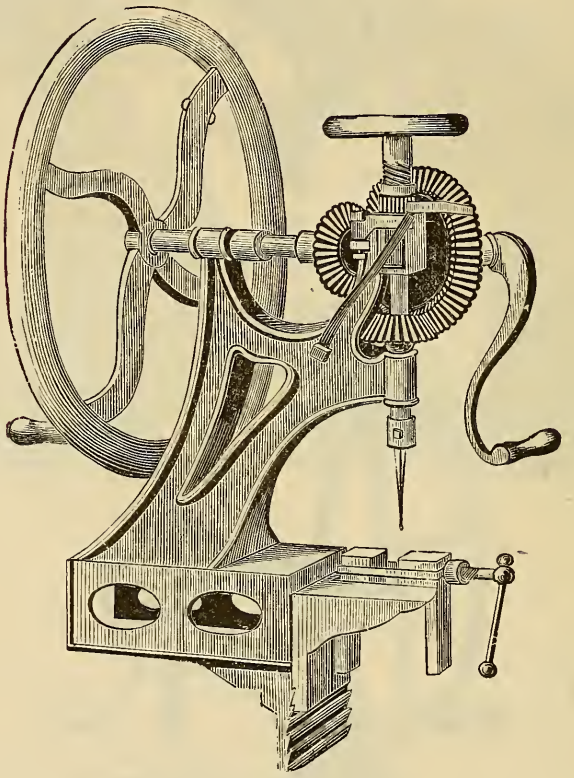


No. 1. Coe's Patent.

Weight.....130 pounds. Price.....$40 00

Suitable for all kinds Carriage and Wagon work, has self-feed and vise attachment. Drill any size hole desired up to one inch. The vises are movable and can be taken off without any delay.

UPRIGHT BENCH DRILL.



No. 2. Coe's Patent.

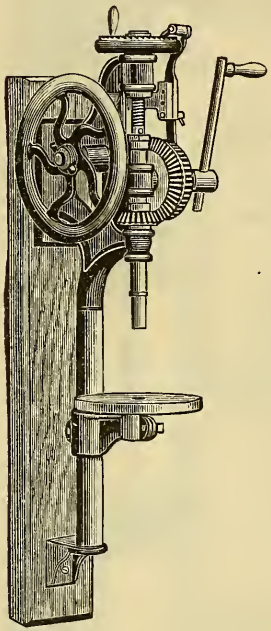
Weight---------- 200 pounds. Price---------- $50 00.

Suitable for all kinds of light and heavy work. Has vise attachment and self-feed. This size machine is the only one we recommend for cutting screws. Can be run with power by putting small pulley on the shaft near the balance wheel, at an extra cost of $2 50 for the pulley.

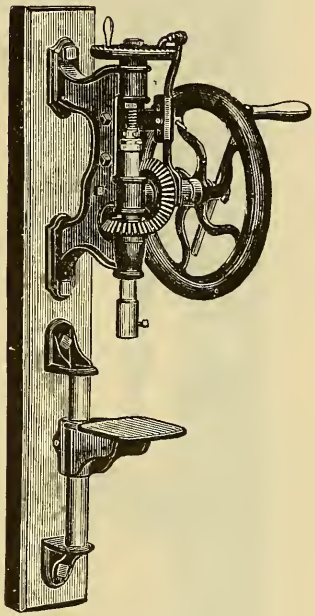
The crank on the balance wheel is used for heavy work and screw cutting, and the one on the Drive wheel for light work.

Can be used to cut bolts and nuts up to ¾ in.

UPRIGHT SELF-FEEDING DRILLS.



No. 0.



No. 1.

Worcester's Patent.

No. 0 ..... $20 00

Chuck for same would be extra.

No. 1, Without Balance Wheel $25 00
1, With " " 28 00

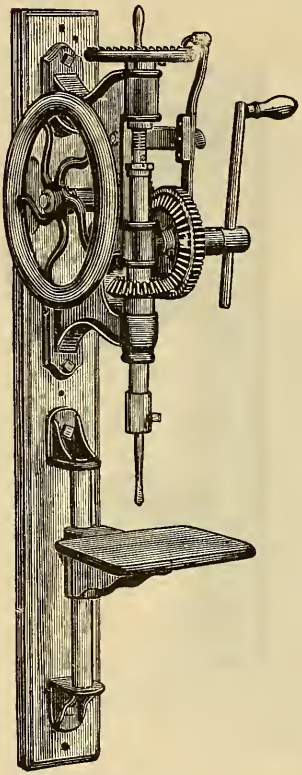
No. 0 Drills from $\frac{1}{16}$ to $\frac{3}{8}$ in. hole.
1 " $\frac{1}{8}$ " $\frac{3}{4}$ "

No. 0. Length, 26 in.; Weight, 30 pounds, and is fitted for a No. 2 Beach Chuck, or can be used without.

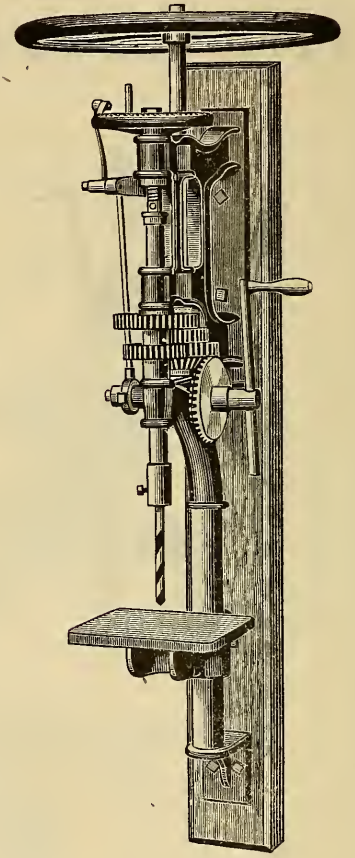
No. 1. Length, 42 in.; Weight, 95 pounds.

Above Drills are easily set up, take but little room, do their work perfectly, and are acknowledged the best Drill made.

UPRIGHT SELF-FEEDING DRILLS.



No. 2.



No. 3.

Worcester's Patent.

No. 2	$48 00
3	75 00

No. 2 Drills from $\frac{1}{8}$ to 1 in. hole.
3 " $\frac{1}{4}$ " $1\frac{1}{4}$ "

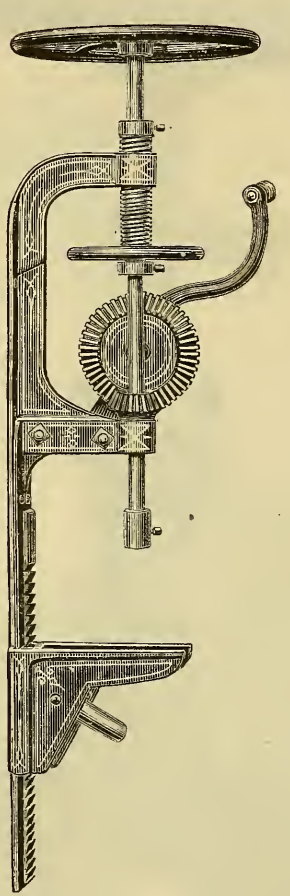
No. 2. Length, 54 in.; Weight, 160 pounds.

No. 3. Weighs 250 pounds, and is arranged with Slip Gear, whereby a quick or slow motion may be given the Drill "as desired," for light and heavy work.

Above Drills are easily set up, take but little room, and do their work perfectly.

No. 3 is so geared that it can be run with power by putting on a band wheel for that purpose.

IMPROVED UPRIGHT DRILL.

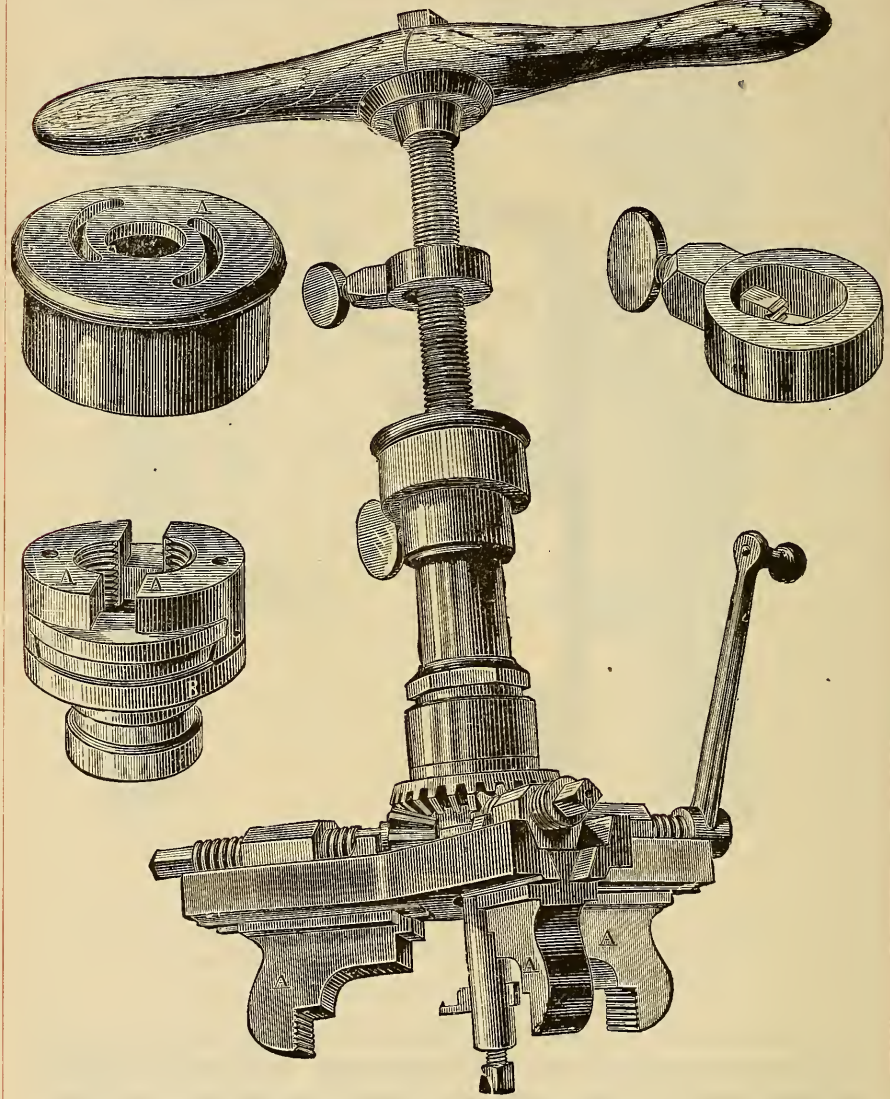


Price $25 00

Above represents a new Drill for Blacksmiths' and Machinists' use, being cheap, simple and durable, with heavy balance wheel on top of the spindle, a feed screw worked by a hand wheel, and a movable table adjusted to any height by a lever.

It can be set up against a solid post, or against the wall or side of the shop, wherever most convenient, care being taken to screw it firmly in place, with heavy wood screws.

SILVER'S
PATENT HUB BOXING MACHINE.

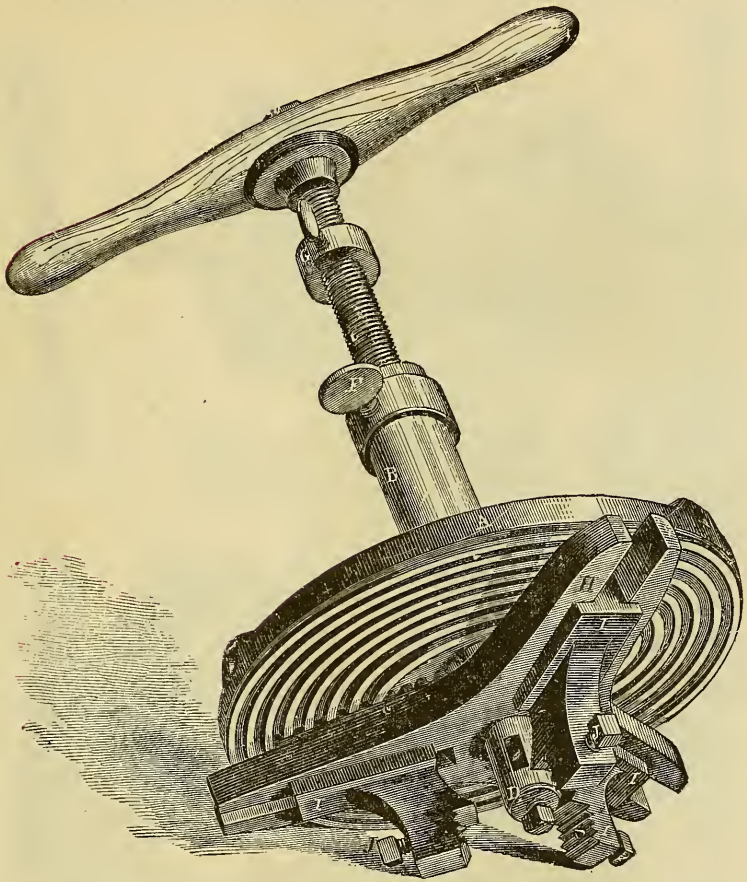


Machine without Mandrel and Bits	$28 00
" with " "	31 50

This machine has the Open or Adjustable Feed-Nut, made in two sections, which are separated by turning the cap to the left; by this means the mandrel can be disengaged from the nut and withdrawn, without any delay of running it back through the nut. The Clamping Jaws are all moved to or from the center by turning one screw. There are two Shoulders on the Jaws, one for Small and one for Large Hubs; and with an extra mandrel turned down small at lower end, with bits to suit, the machine will do heavy and light work.

DOLE'S

PATENT HUB BOXING MACHINE.



No. 1	Machine, Old Style, without Open Feed-Nut	----------	$18 00
2	" " " " "	----------	21 00
3	" " " " "	----------	24 00
1	" with Improved Feed-Nut and Gauge Plate	-------	23 00
2	" " " " "	----------	26 00
3	" " " " "	----------	30 00

Parties having old machines can have the New Feed-Nut attached at the following prices:

No. 1------ $5 00 No. 2------ $5 00 No. 3------ $6 00

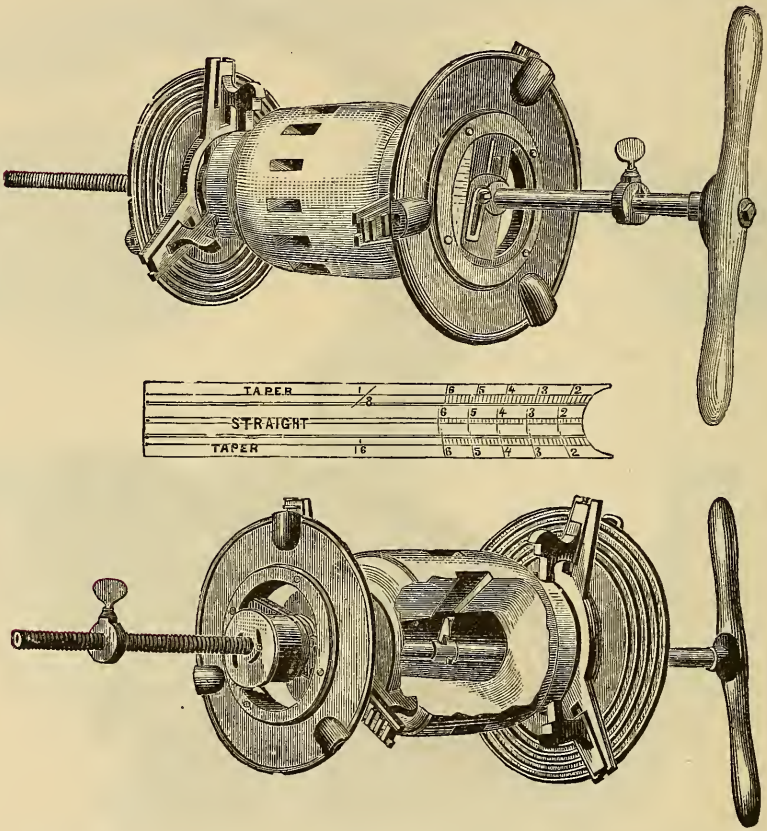
The No. 2 can be used on light work by having an extra Mandrel and Bits for that purpose at a cost of $3 50.

This machine is well known and really requires no description from our hands. It is made with or without the Open or Adjustable Feed-Nut, as described in Silver's Machine.

SILVER'S PATENT

DOUBLE CHUCK,

TAPER HUB BOXING MACHINE.



The first figure shows the outside of the large Chuck, with revolving disk and adjusting slide, through which the mandrel passes, and by which it is thrown out of center when a taper cut is to be made. An index is attached to the disk by which the mandrel is set to cut the degree of taper required. The lower figure is an opposite view, showing the outside of the small Chuck, also showing the Open Feed Nut. This machine is adapted to pipe boxes, and all classes of heavy work, cutting equally well a straight or taper hole.

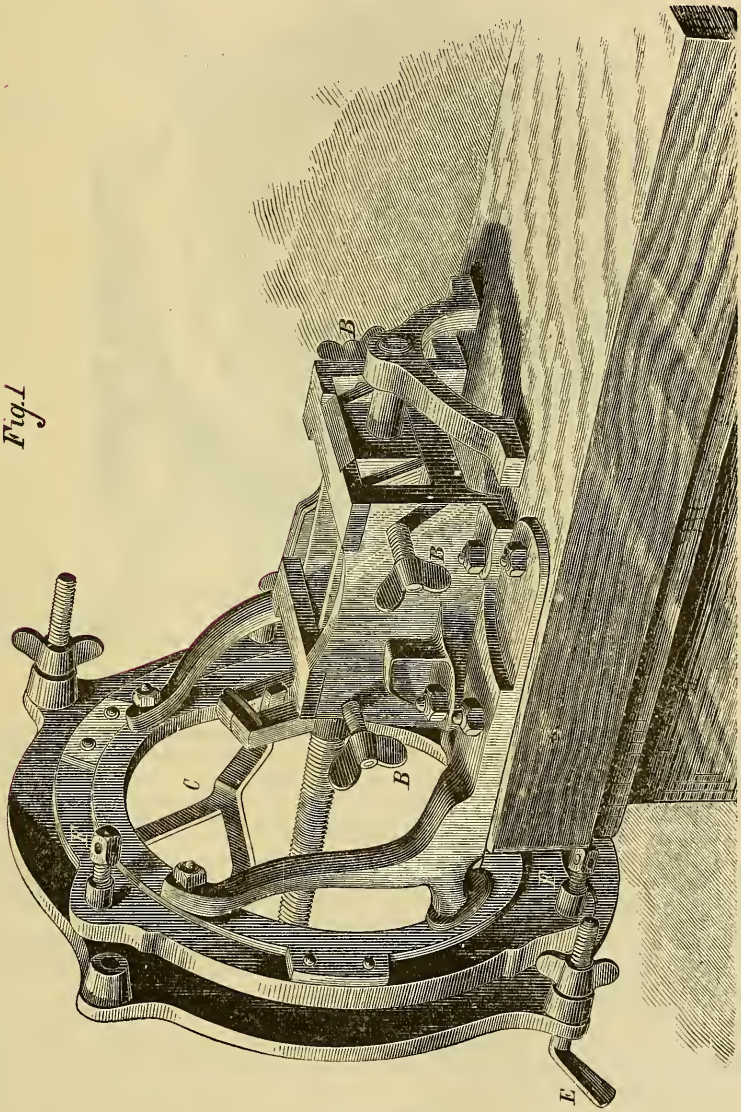
Each machine has an adjusting rule, one end fits the mandrel where the bits are inserted. The margins are graduated to suit different degrees of taper, while the center is marked for straight holes. Full directions accompany each machine for setting up, etc.

Price $40 00.

LITTLE GIANT

HUB BOXING MACHINE.

Fig. 1



Side View.

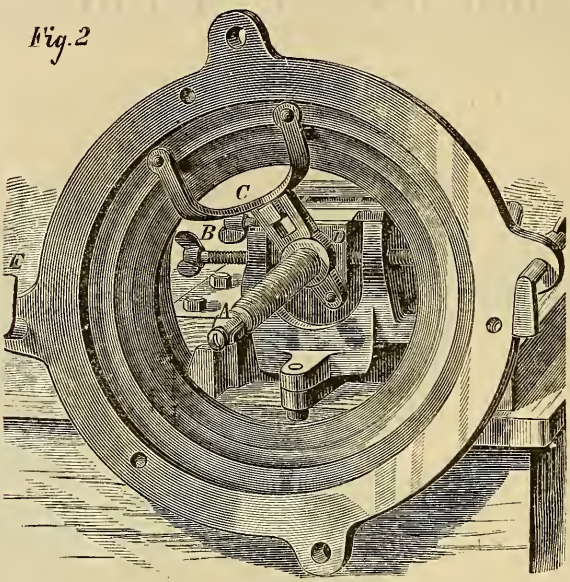
See following page for description and directions.

Price $40 00

LITTLE GIANT

HUB BOXING MACHINE.

Fig. 2



Front View.

Any ordinary mechanic who understands the working of the machine can perform the operation of setting a box ready to run on the axle, viz.: a hub 6½ in. or 7 in. long and ⅞ in. to 1¼ in. axle, (larger sizes consume more time in proportion to the quantity of wood to be removed,) in less than ten minutes.

DIRECTIONS.

1st. Center the hub. 2d. True the rim. 3d. Cut the hole for taper part. 4th. Cut the hole for shoulder at back. 5th. Cut the hole for nut at front. 6th. Drive the box.

The following will give you a general idea of "*how to use it*:" Put the wheel on the machine and do not take it off for any purpose until it is ready to receive the box. Make it run true on the machine before boring.

Set the knife about the same for all boxes, cutting a true taper (if desired), making the hole any size needed at the back and running to any size needed at the front, and *without setting out the knife to change the size of the hole at either end.* A change of $\frac{1}{128}$ in. or more in five seconds can be made with perfect accuracy.

Cut the hole for the shoulder at the back of the box and try the box in the hole before removal from the machine, so that it can be fitted to drive as tight as your judgment dictates.

Cut for the nut at the front of the hub, and try the nut in the hole, so that it fits perfectly.

Then take the wheel off the machine, as the operation is completed, except driving the box, unless the flanges on the box are very large, in which case it might be deemed advisable to cut out a track for them.

Having bored a taper hole, the point commences to bind on all sides at once, so that it is easy to start the box true, and it would be very difficult to change its direction and make it untrue after once started straight. With the hole thus bored, more bearing inside the hub is obtained, so that knotty hubs or hubs soft on one side and hard on the other do not seem to affect the box, as they certainly would if the hole were not tapering for the taper part of the box.

JONAS' PAT. HUB BOXING MACHINE.

Fig. 1.

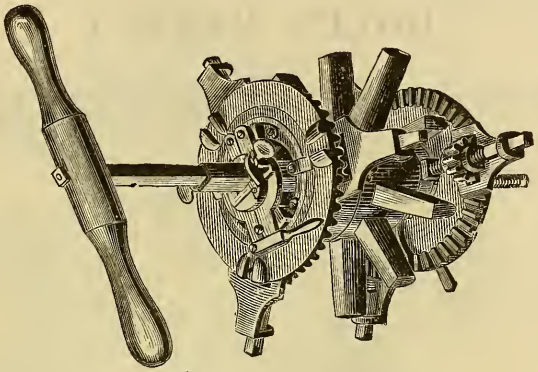
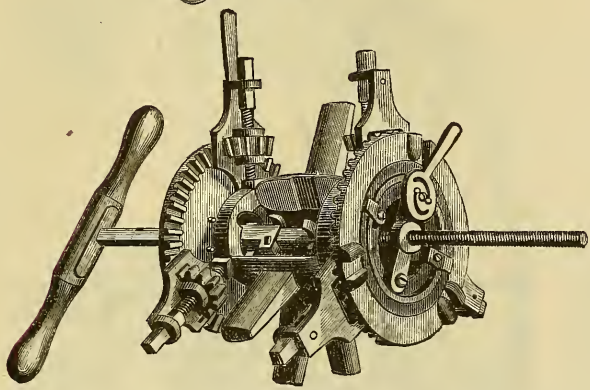


Fig. 2.



Self-Centering Double Chuck Machine.

Fig. 1 shows the Upper Chuck with Collar and Collar Holder, a portion of the Sleeve and Mandrel.

Fig. 2 shows the Lower Chuck and the Feed-Nut; also a section of hub being cut away to show the knives.

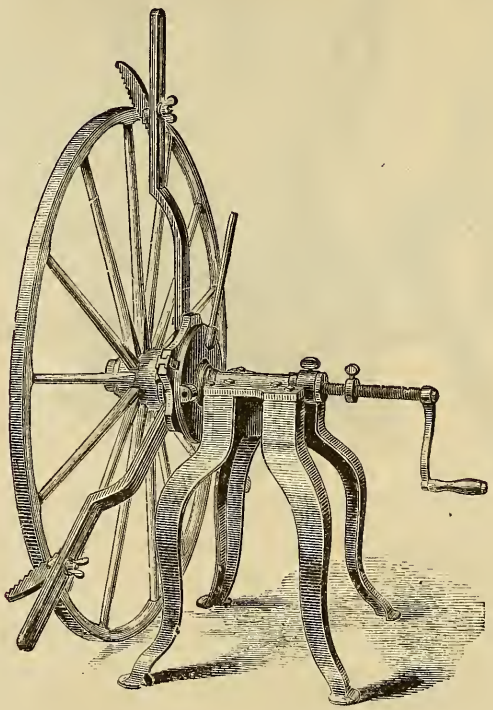
SIZE AND CAPACITY.—The Carriage size will grasp a hub of 2 to 5 in. in diameter, and will cut from 1 to 2½ in. hole. The Wagon size will grasp a hub from 5 to 9 in. in diameter, and will cut from 2 to 5½ in. hole.

SAVING OF TIME AND LABOR, making either a Taper or Straight Cut in the Hub, or both a Taper and Straight Cut in the Hub at one operation, without changing of knives.—This is accomplished by using two knives on the mandrel, the lower knife making the taper and the upper knife making a straight cut, the latter either with or without a shoulder as may be desired, and is, we believe, the only machine now made that will do this.

SIMPLICITY AND COMPLETENESS IN OPERATING.—The Chucks are fastened to the outside of each end of the hub by the three (3) jaws, which are moved forward or back by the three pinions, all driven alike by the same bevel wheel and self-centering. The Mandrel, with knives attached, is placed in position by opening the Feed Nut on the lower Chuck, and the Collar Holder on the upper Chuck. By the Adjustable Slide on the collar on the upper Chuck any desired taper is given to the lower knife. The upper Knife is fastened on a sleeve on the mandrel, which sleeve runs loose on mandrel when not cutting. Both Knives are adjustable for cutting the different sizes required, and need no changing in boring a set of wheels. When the boring is finished, the feed-nut below, and the collar holder above, are opened and the Mandrel drawn out. The Cut or the hole left in the Hub is clean, and exactly the shape of the outside of the box, excepting in the center of the hub the cut is deeper, which prevents the possibility of the spokes being forced through into the box.

Wagon size complete,		"A"	$35 00
Carriage	"	"B"	30 00
"	"	"C"	40 00

DOLE'S PATENT SELF-CENTERING ARM HUB BOXING MACHINE.

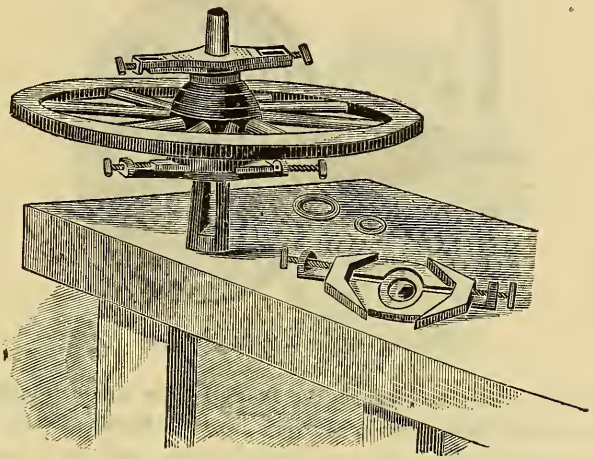


This machine is expressly designed for Light Carriage Work. It centers by the hub same as Dole's ordinary machine, but Trues by the rim of the wheel, which is considered a very great advantage in Light Work. The turned boxes can be set true, and the machine can be used for all kinds of light boxes.

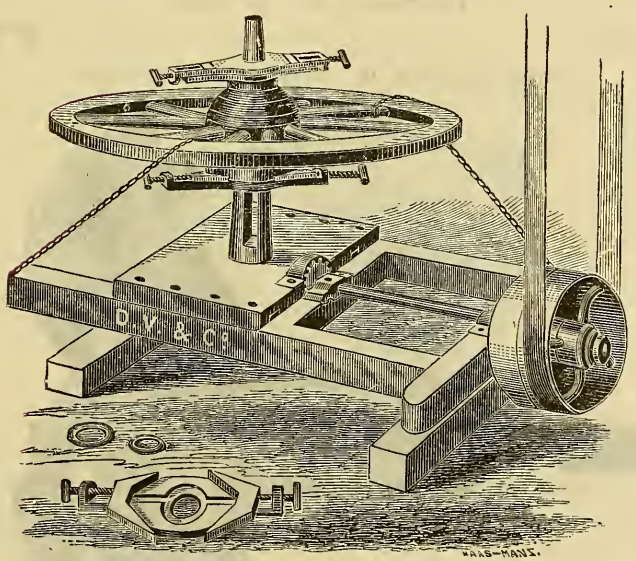
It is made entirely of iron, and therefore is very substantial.

Price $45 00

BREMMERMAN'S
SELF-CENTERING HUB REAMERS.



Hand Hub Reamer.

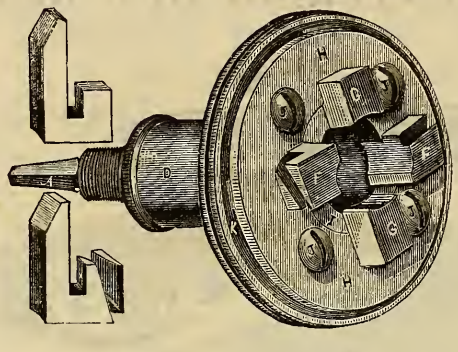


Power Hub Reamer.

There are 34 Rings with each machine, assorted from 2¾ to 4½ in. To adjust them, take one ring which will fit the small end of the box to be used, and place it upon the Reamer. Then another, large enough to pass down the Reamer, so that the distance between the rings will be one-half inch greater than the length of Hub. Place the rings in the Chuck, fasten them to the Hub, put the wheel on the Reamer, hook the chains to opposite spokes, passing outside the felloes, and connect the power.

Hand Reamer..... $40 00. Power Reamer..... $80 00

HOLLOW AUGERS.



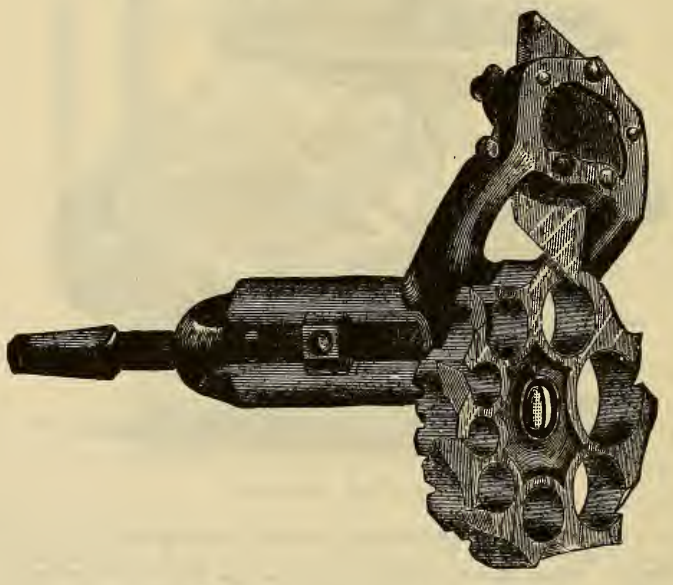
The Star Hollow Auger.

The above is an improvement on the Dole's Hollow Auger, combining all the valuable qualities of Dole's with other very desirable features. The Bits are provided with two cutting edges, arranged at right angles with each other. One cuts the shoulder and the other pares off the surface of the tenon.

Cuts from $\frac{7}{16}$ to 1 in. Tenon.

Price $9 00

Extra Cutters, $1 00. Blanks 60 cents per pair.

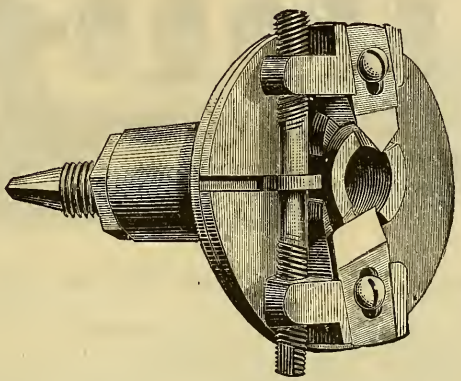


Bonney's Adjustable Hollow Auger.

Cuts from $\frac{3}{8}$ to 1 in. Tenon.

Price $4 00

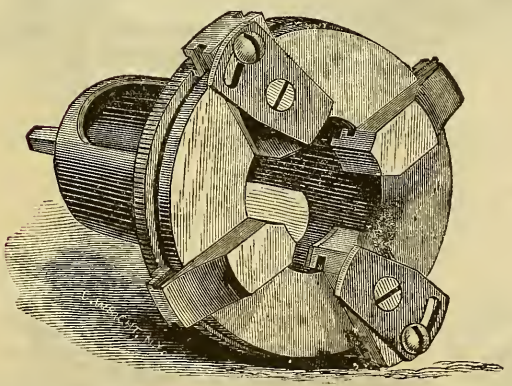
HOLLOW AUGERS.



Edwards' Improved Hollow Auger.

Cuts all sizes, from ⅜ to 1 in. tenon, 3 in. long.

Price..... $8 00



Douglass' Improved Universal Hollow Auger.

Without Bits, with Improved Extension Cutters..... $4 50 each.

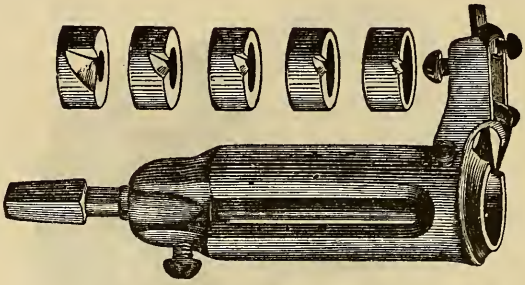
With Cook's Patent Bits and ⅜ to 1½ in..... 9 50 "

The above cut represents an entirely new tool — unlike anything before offered in market.

It secures all the efficiency, and avoids all the complications of the tools made for this purpose heretofore.

It will answer the purpose of a full set of eight or ten Hollow Augers.

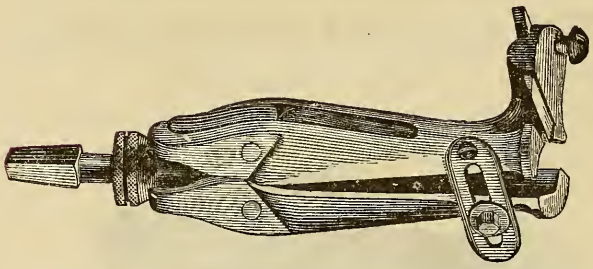
HOLLOW AUGERS.



Stearns Patent Adjustable Hollow Auger.

Cuts 7 different sizes of tenons.

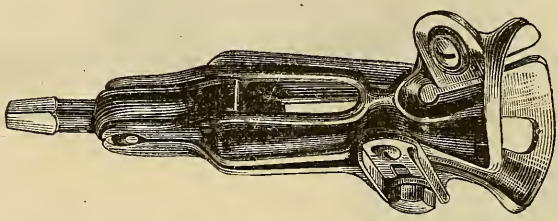
Price $4 00



Stearns Patent Expansion Hollow Auger.

Cuts all sizes, from ⅜ to 1 in. tenon. It is adjusted with a Conical Nut and Set Screw, the knife being held in place by two screws.

Price $4 00

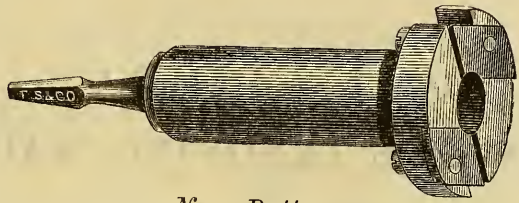


Stearns Patent Expansion Fore Auger.

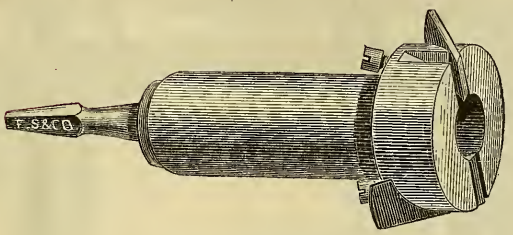
An Auger used for trimming down a spoke before using the Hollow Auger, effecting a saving of one-half and the labor of tenoning a spoke, by the knife cutting at an angle more with the grain of the timber than the Hollow Auger.

Price $2 50

HOLLOW AUGERS.



New Pattern.

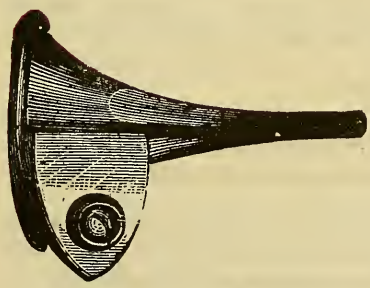


Old Pattern.

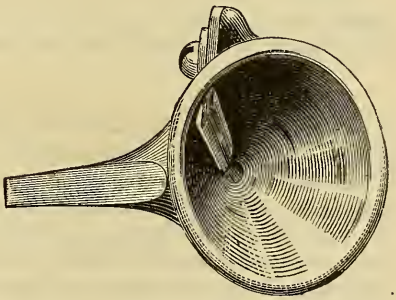
	½	⅝	¾	⅞	1	1⅛	1¼	1½	
New Pattern,	$12 00	14 00	14 00	16 00	16 00	20 00	20 00	25 00	per dozen.
Old "	12 00	14 00	14 00	16 00	16 00	20 00	20 00	25 00	"

Boring Machine Augers, Set of 18 qrs. (1 each, 4, 6 and 8 qrs.)..... $3 50

SPOKE POINTERS.



Ives' Patent Spoke Pointer.

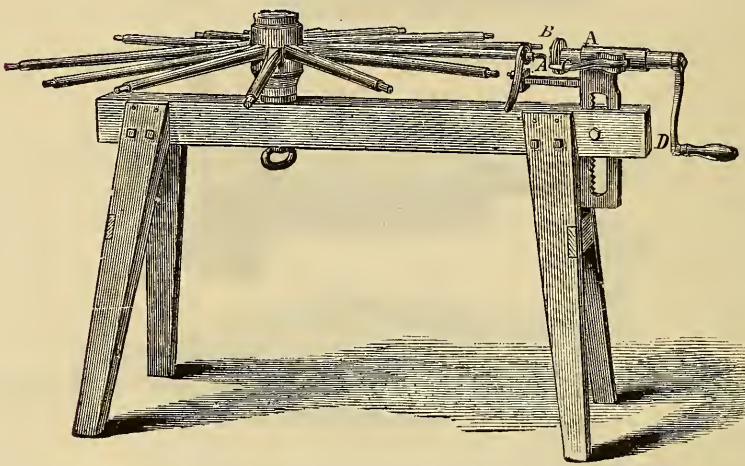


Bonney's Patent Spoke Pointer.

Ives' Patent	$10 00 per dozen.
Bonney's Patent	10 00 "

DOLE & DEMING'S

PAT. SPOKE TENONING MACHINE.



No. 1.

No. 1.	Complete with Felloe-Boring Attachment	$25 00
1.	" without " "	19 00

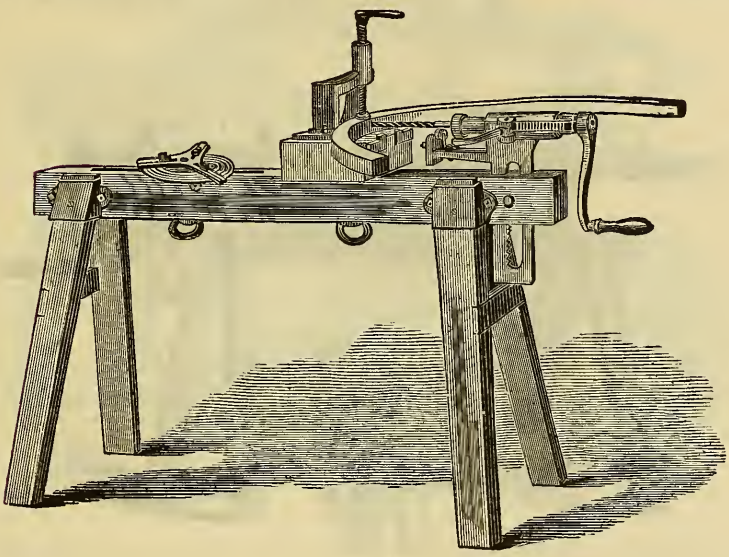
The No. 1 Machine is provided with the Star Hollow Auger, capable of cutting Tenons from $\frac{7}{16}$ up to 1 in., but is not furnished with legs, as it is generally clamped in the vise or on the bench. Can be furnished with legs at a trifling cost.

DESCRIPTION.

The Hub is held in a self-centering Chuck, which admits of revolving the wheel to present the spokes to the Hollow Auger, which are firmly held on the spoke rest, in line with the Hollow Auger. Each and every tenon is cut with the shoulders uniform in width and in the same plane.

Each Tenoning Machine is now furnished with the new Star Hollow Auger, similar to Dole's (which is not now made), but a great improvement on the Dole, combining all the qualities of the Dole's Auger, together with very desirable new features of its own.

DOLE & DEMING'S
PATENT BORING MACHINE.



No. 2.

No. 2. Complete with Felloe-Boring Attachment $35 00

2. " without " " 27 00

The No. 2 Spoke Tenoning Machine is of a larger size than the No. 1, having a Hollow Auger of large size, and cutting a Tenon from ¾ in. up to 1½ in.

Above cut represents the Spoke Tenoning Machine changed to a Boring Machine by removing the Hollow Auger from the mandrel and substituting in its place a Chuck for holding Auger Bits, and putting on the table for holding the Felloe. You have a complete machine for boring, perfectly true; so that with the Tenons cut true, and the Felloes bored true, they fit perfectly together.

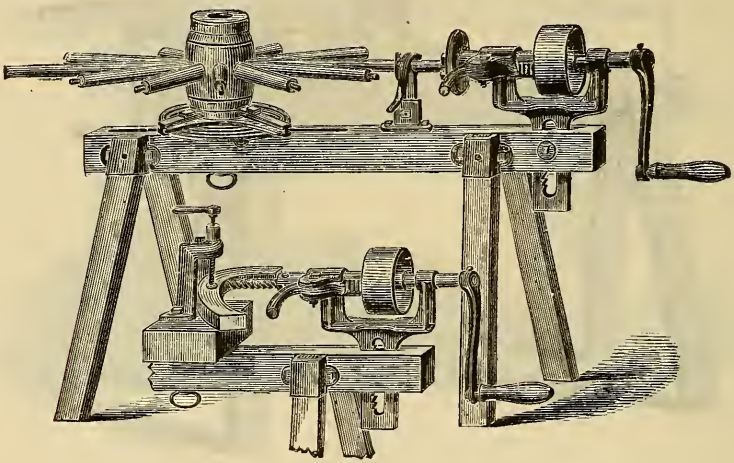
The Deming's Self-Centering Chuck can be furnished at an extra charge of $5 00.

DOLE & DEMING'S

PATENT IMPROVED

TENONING AND BORING MACHINES,

FOR HAND AND POWER.



No. 3.

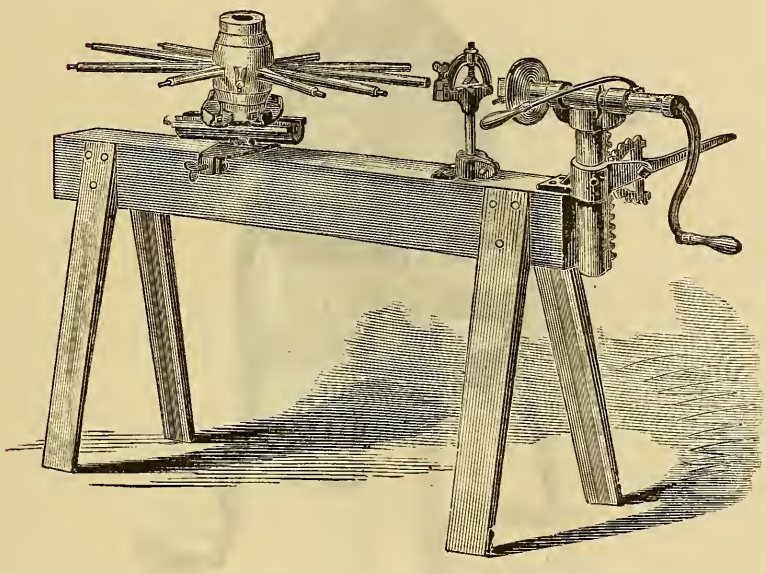
No. 3. Complete, with Felloe Boring Attachment and both Hollow Augers, $50 00.

No. 3 represents a combination of the Tenoning and Boring Machine, with power attachment. This machine was gotten up for the purpose of meeting a want, by Wagon and Carriage Makers, for a machine that could be operated with equal facility by hand or power, and all classes of work. By reference to the engraving the Head or Tool Carrier has two bearings for the shaft, a pulley being attached to the latter to run by power. By having two sizes of hollow augers this machine has a capacity ranging from $\frac{7}{16}$ to $1\frac{1}{2}$ in., which adapts it for all classes of work.

In order to avoid difficulties experienced by Carriage Makers in getting square shank bits properly fitted to bore holes true, each machine has a Bit Chuck with round hole of standard size.

EDWARD'S IMPROVED

SPOKE TENONING MACHINE.



The Chuck in which the wheel is held is self-centering, and is so attached to its base as to give it free rotary motion, as well as ample oscillation to allow the spokes to pass freely in and out of the forked stand in front of the auger. The base of the Chuck centers itself upon the frame when clamped to its place by means of the Thumb-screw, and is very readily adjusted to any part of the frame by simply loosening the Screw. The Spoke is firmly held in its place while the tenon is being cut by means of a Clamp that is very quickly adjusted, and as readily thrown over out of the way when the Spoke is to pass around to give place to the next one. This is a decided improvement over any previous method, and leaves the left hand entirely free to feed the auger up to the work.

The device to raise and lower the head, consisting of Cog-rack and Lever, is more convenient and more mechanical than any other method previously adopted for this purpose, while the Clamp-nut holds it rigidly in place at any desired point.

An attachment for boring Felloes is also furnished, which is not shown in the engraving. The Frame is not furnished with legs, as parties can readily attach them.

Machine complete, with Felloe-Boring Attachment..... $25 00
" " without " " 20 00

THE EMPIRE

FAN-BLOWING PORTABLE FORGE.

Geared for Hand.

For Shop Use, with Hood and Doors Complete.

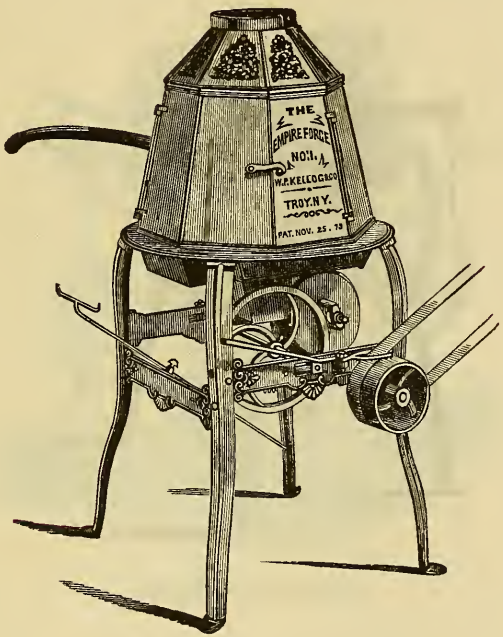
LIST.

NO.	FAN.	DIAMETER.	HEIGHT.	WEIGHT.	PRICE.
0	7 in.	1 ft. 10 in.	3 ft. 10 in.	160 lbs.	$35 00
1	7	2 1	4	170	40 00
2	8	2 3	4 3	270	50 00
3	8	2 7	4 6	285	60 00

Four sizes this style, all with Hood and Doors, to which a Pipe may be fitted to carry off the smoke. The doors close tightly, making it as safe and free from danger by fire as a common stove.

THE EMPIRE

FAN-BLOWING PORTABLE FORGE.



Geared for Power.

For Shop Use, with Hood and Doors Complete.

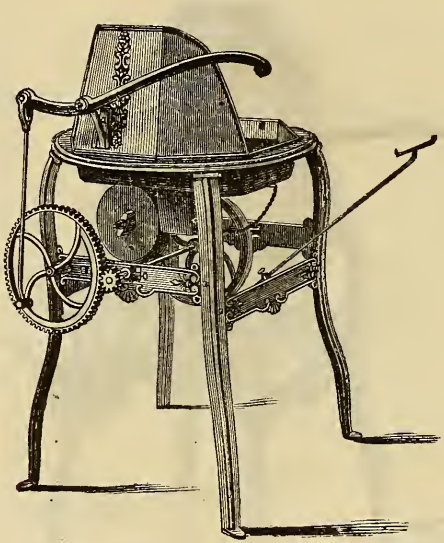
LIST.

NO.	FAN.	DIAMETER.	HEIGHT.	WEIGHT.	PRICE.
0	7 in.	1 ft. 10 in.	3 ft. 10 in.	175 lbs.	$40 00
1	7	2 1	4	185	45 00
2	8	2 3	4 3	290	55 00
3	8	2 7	4 6	300	65 00

The advantage of running the Forges by power is evident, particularly the large sizes. A Handle is always furnished, so that they can be used either way and are made with or without Hood and Doors.

THE EMPIRE

FAN-BLOWING PORTABLE FORGE.



Geared for Hand.

Without Hood or Doors.

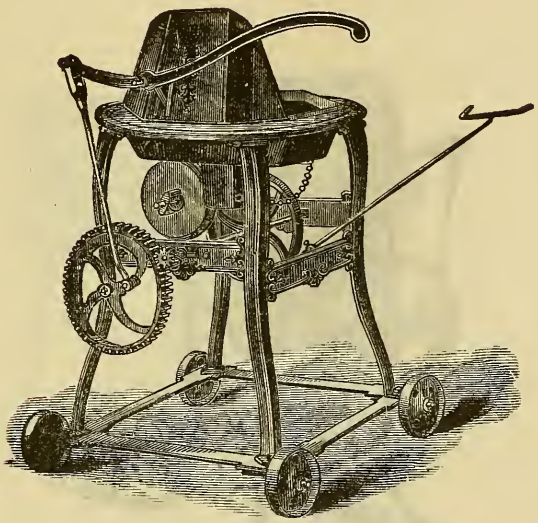
NO.	FAN.	DIAMETER.	HEIGHT.	WEIGHT.	PRICE.
0	7 in.	1 ft. 10 in.	3 ft. 4 in.	130 lbs.	$30 00
1	7	2 1	3 6	140	35 00
2	8	2 3	3 9	230	45 00
3	8	2 7	4	245	55 00

Nos. 0 and 1 are light enough for transportation. Nos. 2 and 3 are designed for stationary shop Forges.

This style of Forge is used principally out of doors, though they can be set up inside, by hanging a sheet iron hood over them.

$5.00 per No. extra, if geared for power.

THE EMPIRE
FAN-BLOWING PORTABLE FORGE.



Geared for Hand.

Without Hood or Doors, on Wheels.

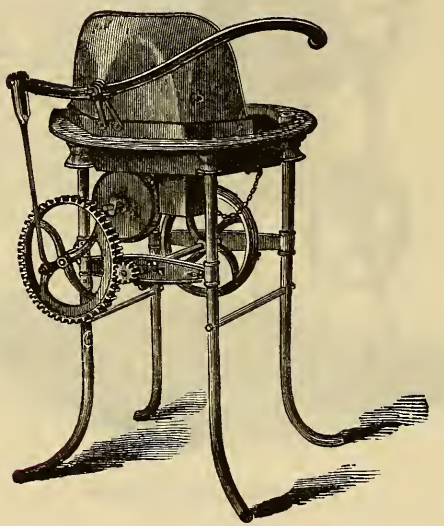
NO.	FAN.	DIAMETER.	HEIGHT.	WEIGHT.	PRICE.
0	7 in.	1 ft. 10 in.	3 ft. 4 in.	150 lbs.	$40 00
1	7	2 1	3 6	160	45 00
2	8	2 3	3 9	250	55 00
3	8	2 7	4	265	65 00

$5.00 per No. extra if Mounted on Wheels, with Hood and Doors, complete.

Nos. 0 and 1, without Hood, on Wheels, make very good Forges for Transportation, and are used by Plumbers, Boilermakers, Ship Builders, Bridge Builders, and in Mines. Nos. 2 and 3 are heavier, and will do very well for moving around the shop, or on deck of a ship.

THE EMPIRE

FAN-BLOWING PORTABLE FORGE.



No. 10. Geared for Hand.

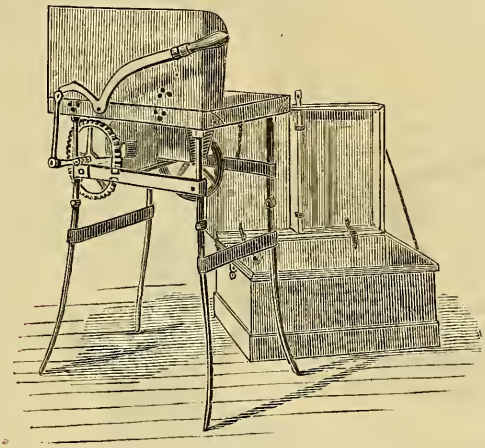
Wrought Iron Legs. For Transportation.

FAN.	DIAMETER.	HEIGHT.	WEIGHT.	PRICE.
1 in.	1 ft. 8 in.	3 ft. 2 in.	90 lbs.	$27 00

This Forge is made with wrought iron legs, and is very light. As the working parts are all low down, it is also very stable. It is intended especially for Boiler Makers, Miners, Quarrymen, and the like, and easily carried about the country for repairs.

THE EMPIRE

FAN-BLOWING PORTABLE FORGE.



No. 15. Army Forge.

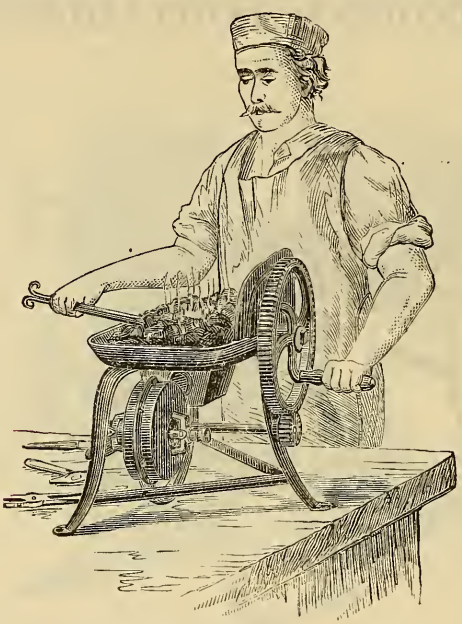
Wrought Iron Legs. For Transportation.

FAN.	FIRE PAN.	HEIGHT.	WEIGHT.	PRICE.
7 in.	18×16	2 ft. 6 in.	75 lbs.	$50 00

The "Army Forge" is made of wrought iron, the legs and back folding together compactly when closed. This Forge is well designed for use on the mountains or plains, where they are transported long distances, and where lightness and strength are needed. It can be unpacked and ready for use in one minute. Packed in iron-bound chests.

THE EMPIRE

FAN BLOWING PORTABLE FORGE.



No. 12. Bench Forge.

	FAN.	SIZE.	HEIGHT.	WEIGHT.	PRICE.
No. 12, without Top	7 in.	12 × 17	15 in.	50 pounds.	$16 00
12, with "	7	12 × 17	28	70 "	20 00

The above Forge has all the essential features of other Forges of this make, with legs 13 in. high, and when used can be set on a box or bench. Is very light and strong, and has same fire-blast capacity as the No. 0, and half the cost. They are made either with or without top. The hood has doors, which can be turned back out of the way, giving free access to the fire, and a collar to which a stove pipe may be attached to carry off the smoke and sparks, making it particularly convenient and safe in a shop. They weigh only 50 pounds, and will make a fire hot enough to melt ¾ to 1 in. iron in two minutes, and will heat a 2½ in. bar to a welding heat in less than 10 minutes, having no bellows or belts to wear out, or to be affected by the weather. Are durable, compact and effective, and are needed by all who make use of a forge.

THE EMPIRE
FAN-BLOWING PORTABLE FORGE.

DIRECTIONS FOR SETTING UP AND USING THESE FORGES.

TO SET THE FORGE UP.

1st. The *Handle* should be placed on the *left hand* side of the Forge, with the *oil hole* on the upper side.

2d. The *Large Friction Pulley*, under the bottom, should press snugly (though not too hard) against the leather pulley in the fan. This is done by moving up the *Spring Socket* in the brace on *right hand* side of the Forge. The *Brass Box* in the opposite brace should be moved up, also, if necessary, to make both in line with each other.

3d. The *Large Gear Wheel* should be moved either towards or from the pinion as is necessary to make them work well together without crowding.

4th. The Bearings should be oiled, particularly the *Brass Boxes* in the braces, and the *Brass Bushings* in the fan, and care exercised *not* to get any oil or dirt on the faces of the friction pulleys.

5th. It is *necessary* to protect the bottom with a covering of *clay or earth* to prevent the bearings from heating.

TO RUN THE FORGE.

6th. Give the handle a *long, steady stroke*, allowing the crank to pass the center each time.

7th. Notice, that to obtain the best blast, the *Large Gear Wheel* should revolve towards you.

8th. If a stronger blast is desired, the wind opening in the tuyere iron can be enlarged by putting a washer under both ends of the "bird's nest," or by drilling three or four quarter-inch holes through the tuyere plate.

9th. The *Ash Box* under the tuyere plate can be emptied, without disturbing the fire, by removing the slide from the bottom of it.

10th. Keep the *Brass Bushings* in the fan well up to the shoulders on the shaft, to prevent rattling, and if the Fan does not revolve, or slips, follow the directions given in No. 2.

WE CLASSIFY THE EMPIRE FORGES AS FOLLOWS:

FORGES FOR SHOP USE.—Nos. 0, 1, 2, 3, which are designed for use in *machine shops* especially, or on board *vessels*, where they may be set up for a definite time. ☞ They are *not* intended for transportation about the country.

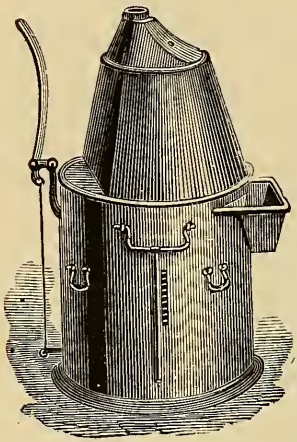
FORGES FOR TRANSPORTATION.—Nos. 0 and 1 on Wheels. No. 10 with wrought iron legs, and No. 15, or "Army Forge" with wrought iron legs, which are designed to combine lightness with strength, tha they may easily be moved about wherever necessary for light and ordinary work of all kinds, by Blacksmiths, Carriage Makers, Machinists, Boiler Makers, Locksmiths, Plumbers, &c. For Riveting Forges they are special favorites. They are invaluable, both on account of efficiency and portability, on Farms, Plantations, Lumber Camps, Quarries, Construction Trains, Mines, &c.

☞ Forges Nos. 2 and 3, either *with* or *without* Hood, are large enough for almost all kinds of work in Blacksmiths' shops, Carriage shops, Large Machine shops, &c., and are *far superior* in every respect to the old-fashioned bellows and brick Forge. They are generally ordered complete with Hood and Doors.

☞ Forges Nos. 0 and 1 with Hood, are frequently purchased by Jewelers and Dentists—as the top shuts up and prevents any escape of gas or fumes. When on wheels, they are frequently used for out-door work—especially for boiler making and repairing.

We expect soon to offer the public an independent Fan-blower of greater capacity than the largest blacksmith's bellows, and intended to supplant it. We shall also make a Mammoth Forge for the largest kind of work, and continue to add to our variety of Forges, designed for special work, until our line becomes the largest and most complete assortment of Forges and Blowers in the United States.

QUEEN'S PATENT
PORTABLE FORGE AND BELLOWS,
COMBINED.



Sole Agent for the Northwest.

QUEEN'S PATENT

PORTABLE FORGE AND BELLOWS,

COMBINED,

For Blacksmiths, Jewelers, Dentists, Machine Shops, Boiler Makers, Coppersmiths, Quarries, Miners, Railroad Shops, etc.

BLACKSMITH'S.

NO.	WEIGHT.	DIAMETER.	HEIGHT.	PRICE.
0	95 lbs.	1 ft. 8 in.	3 ft. 10 in.	$26 00
A	135	1 9	3 11	32 00
1	205	2	4 2	42 00
1½	245	2 3	4 5	51 00
2	335	2 6	4 8	63 00
3	445	3	4 10	78 00

JEWELER'S.

NO.	WEIGHT.	PRICE.
0	105 lbs.	$28 00
A	145	34 00
1	230	44 00
1½	280	54 00
2	385	65 00

The No. 0 Forges are made without slides for closing, and without water troughs.

DIRECTIONS FOR SETTING UP.

When the Forge is in its place for use, and before opening the slides, remove the small rod in front of the Forge (which is only required in transportation), after adjusting the fixtures; and before using the Forge, under all circumstances, unless it is a Jeweler's Forge, fill the cast bottom or fire bed, except directly over the tuyere iron, with fire-clay, loam, or plaster of Paris, which is the best.

When taking a heat, keep the iron well up from the tuyere iron, so there may be fire between the two.

The small gutter under the door at the back is to carry off the water from the Forge.

The tuyere iron is easily taken out by removing the small cast iron cap that holds it in its place, with but *one* nut on the inside of the Forge.

A coat of paint occasionally put upon the cylinder that contains the bellows will add to its durability.

ROOT'S

IMPROVED PORTABLE FORGES.

Five Sizes of these Forges are Made, Adapted to All Classes of Work.

SIZE NO. 1.—Suitable for Boiler Repairs and outside work, Plumbers and Gas Fitters; is very light, easily handled. Circular hearth, 14 by 20 in., with column support. Height, 24 in. Weight complete 158 pounds Blast equal to 24-in. Bellows.

Price $40 00

SIZE NO. 2.—Suitable for Locksmiths, Platers, Braziers, Boiler Shops, for heating rivets and light work. Hearth, 14 by 20 in. Height, 24 in. Weight with Blower complete, 203 pounds. Blast equal to 30-in. Bellows. This size is made with or without chimney, as desired.

Price $50 00

SIZE NO. 3.—Suitable for Machine Shops, Boiler Shops, Steamships, Steamboats, Ferry Boats, Gunsmiths and Jewelers; also Farms and Plantations, and especially adapted to Army and Navy purposes. Hearth, 20 by 30 in. Height to top of chimney, 4 feet. Weight with Blower and Slack Tub complete, 309 pounds. Blast equal to 36-in. Bellows.

Price $70 00

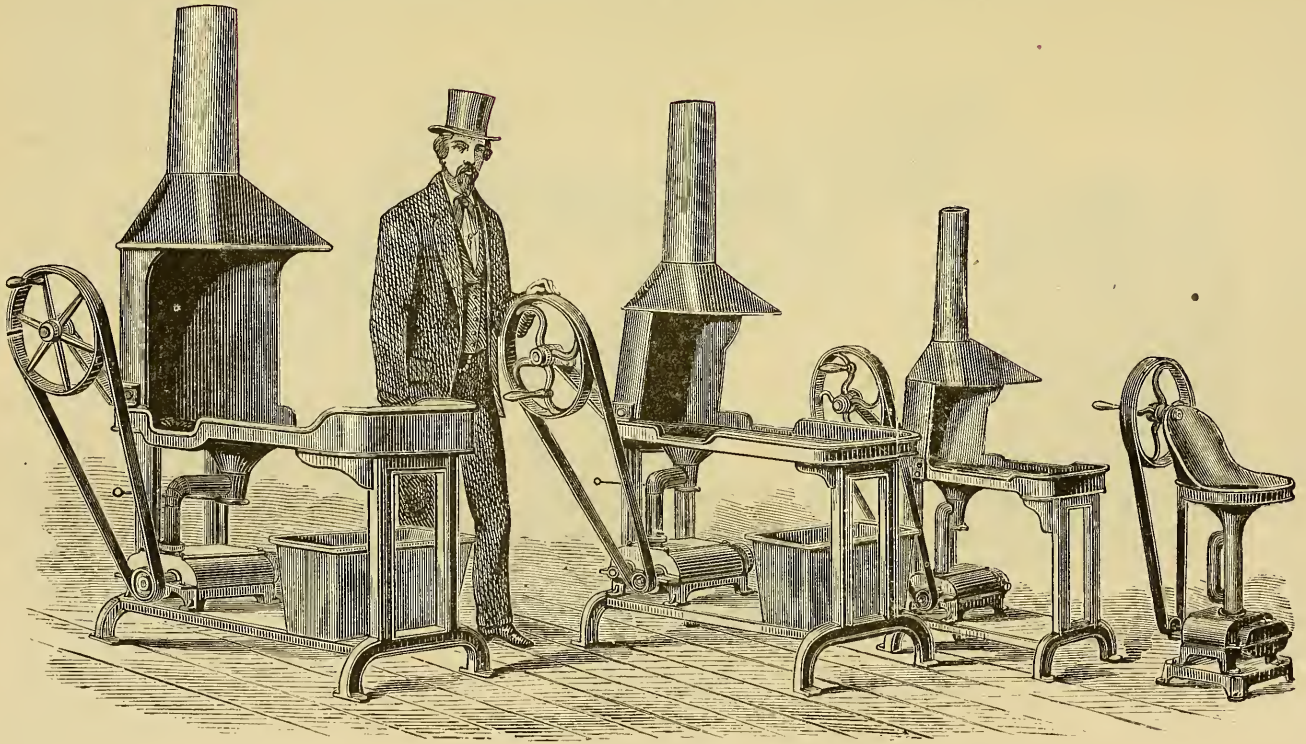
SIZE NO. 4.—Suitable for Blacksmith Shops, Carriage and Wagon Shops, and general purposes. Hearth, 30 by 42 in. Height to top of chimney, 5 feet. Weight with Blower and Slack Tub complete, 482 pounds. Blast equal to 40-in. Bellows.

Price $100 00

SIZE NO. 5.—Suitable for Machine Shops and Heavy Forgings. Hearth, 36 by 60 in. Height to top of chimney, 6 feet. Weight with Blower complete, 1215 pounds. Blast equal to 50-in. Bellows.

Price $150 00

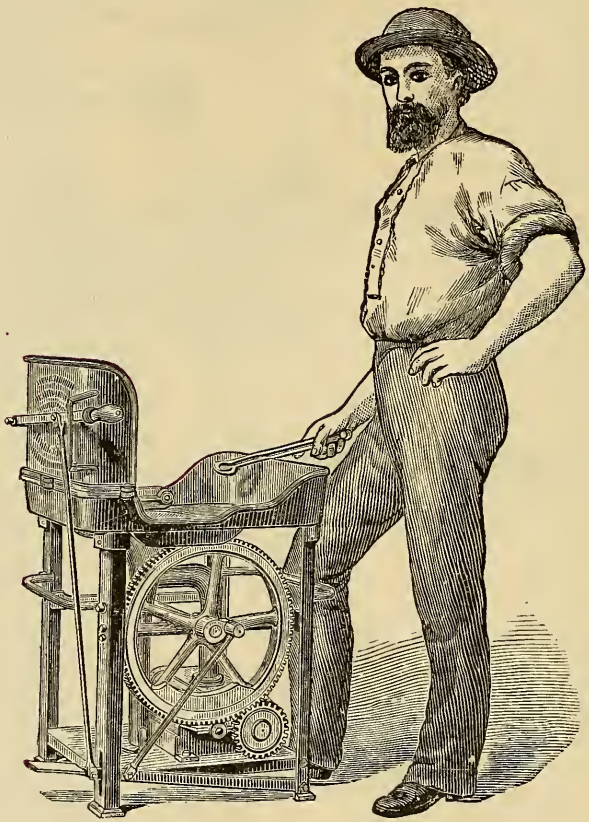
ROOT'S IMPROVED PORTABLE FORGES.



No. 4. *No. 3.* *No. 2.* *No. 1.*

ROOT'S PORTABLE FORGE

AND RIVET HEATER.

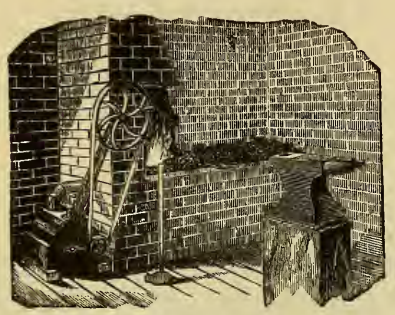


Letter A. With Treadle Movement.

Price $40 00

Above cut represents a Forge adapted to iron bridge building, architectural iron works, iron roofs, boiler works, and all kinds of repairing in iron. The prominent features of this Forge are compactness, efficiency, strength, durability and power required. The hearth is only 15 × 20 in., and height only 24 in., and its capacity is equal to an ordinary Forge with 36 in. Bellows. It will heat a bar of 2 in. round iron to a welding heat in five minutes' time. Being small, it is easily transported from place to place; and also being low, and principal weight near the bottom, it is not easily upset.

ROOT'S BLACKSMITH'S BLOWERS.



Hand Blower.

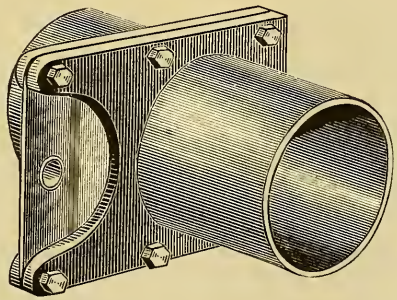
No. ½.	Hand Blower, adapted to one fire, ordinary size	.....	$36 00
1.	" " " " heavy "	.....	45 00
2.	" " " one or two fires, heavy	.....	70 00
3.	Power " " three or five fires, "	.....	130 00

Size No. 1 will furnish ample blast for all ordinary fires.

Size No. 2 answers equally well for all ordinary fires, but is also adapted to the largest class fires, such as used in boiler shops, and other heavy work, and when run by power will furnish blast for two or three fires.

These Blowers occupy but little room — about eighteen inches square — and are operated more easily than the bellows.

BLAST GATE.

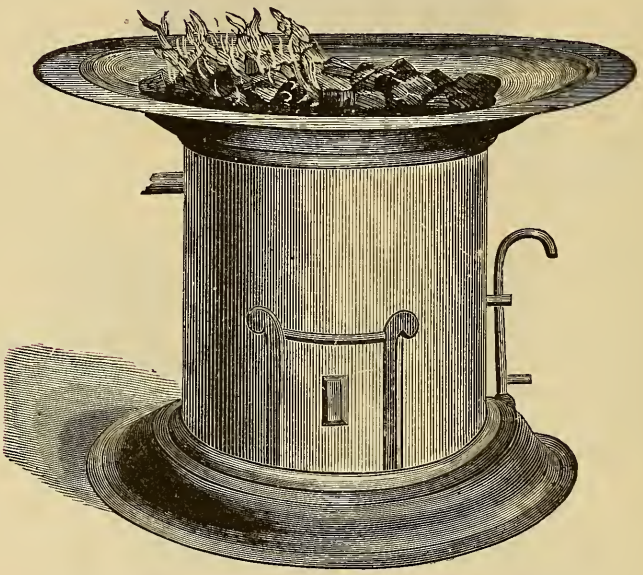


For opening and closing pipes which supply blasts to furnaces, forges, etc.

Price	$1 25	1 75	2 50	3 50	4 50	6 50	9 00	11 00	16 50 each.
Size	2	3	4	5	6	8	10	12	15 in

PATTERSON'S

PATENT BLACKSMITH'S FORGE.

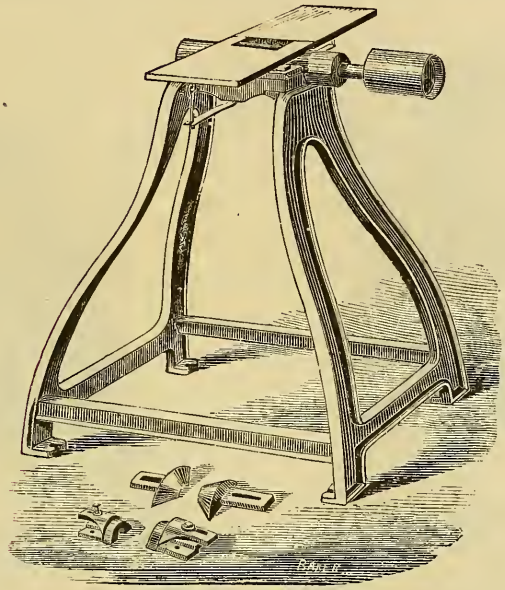


		WEIGHT.	PRICE.
No. 1	Boilermaker's Rivet Fire	60 lbs.	$13 00
2	Tool Repairer's Fire, for Machine Shops	150	22 00
3	Horse-shoeing and Common Work	180	29 00
4	Carriage and Wagonmaker's Shops	250	39 00
4½	Large Capacity, for common Machine Shop	400	51 00
5	Large enough for Locomotive Drive Wheels	500	61 00
6	Suitable for Railroad Shops	775	80 00

Each Forge is supplied with two Perforated Conical-shaped Tuyeres, but of different capacities, which can be changed in a moment, are indestructible by fire, and will not choke up.

ELMWOOD

RADIUS AND BUZZ PLANER.



PRICE LIST.

No. 1.	With small attached Table	$65 00
2.	With larger attached Table	70 00
3.	With adjustable disengaged Table	75 00
4.	With attached Table for wide work	100 00

DIRECTIONS FOR THE USE OF THE ELMWOOD PLANER.

Speed up to 3,000 revolutions per minute, if possible ; less than 2,500 per minute will not do good, smooth work.

See that the knives are sharp, and adjusted to run in the same plane ; that is, be careful that one corner is not higher than another, or one knife higher than the other—this is very necessary. Having got them right, screw them down to the head very tight, so that they will not move in running.

To regulate the thickness of the shaving, in using the attached table, raise or lower the set-screw at the end of and under the table, using the jam nut to hold the screw in place. In the case of the disengaged table, the set-screws to regulate are at the ends of the opening through which the knives work. Care must be used to adjust them alike.

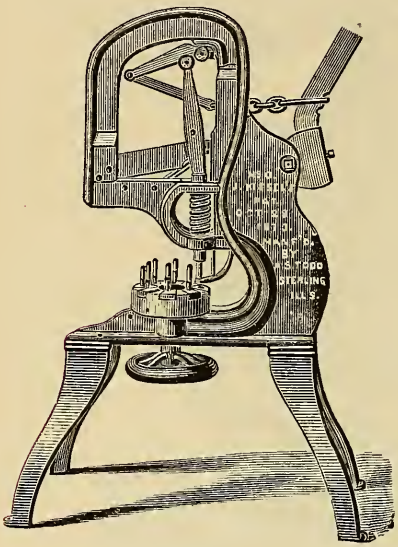
To plane crooked work, the table is swung off or laid aside, and the cast iron bearings furnished with the machine, shown in the foreground of the engraving, are bolted on over the boxes. Hollow wooden patterns must then be made, whose upper and under faces correspond to the shape desired in the stick to be planed, which must be placed inside these patterns, and held securely therein by means of set-screws.

All these arrangements any mechanic will understand, and be able to accomplish. It is then passed over the knives in the opposite direction to which they run—the patterns bearing on the shoulders—the knives will cut off all below the pattern. Reverse to plane off the other side.

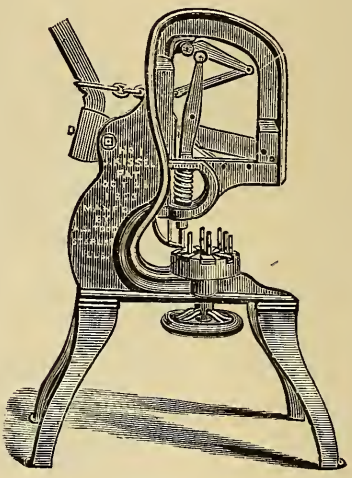
Keep the boxes well oiled and knives sharp.

KISSEL'S COMBINED

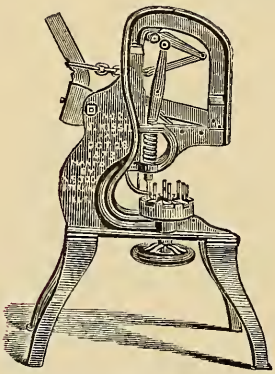
PUNCHING AND SHEARING MACHINES.



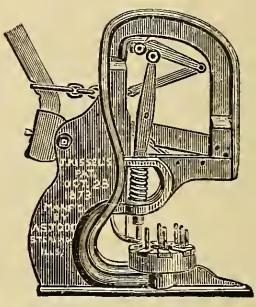
No. 0.



No. 1.



No. 2.



No. 3.

All of above Machines have eight Punches and Dies complete.

KISSEL'S COMBINED

PUNCHING AND SHEARING MACHINES.

No. 0 is the largest size made, and will cut 1 in. round or $\frac{5}{8}$ in. flat, any width that can be got in the shears. It is intended for plow shops where heavy work is required, and will punch $\frac{5}{8}$ in. hole in $\frac{1}{2}$ in. iron.

Weighs 600 pounds.....Price $140 00

No. 1 is intended for general practical purposes for small plow shops, or heavy carriage works. Will cut $\frac{3}{4}$ in. round or square, or $\frac{1}{2}$ in. flat, and punch $\frac{1}{2}$ in. hole in $\frac{1}{2}$ in. iron.

Weighs 500 pounds.....Price $110 00

No. 2 is suitable for light carriage work or blacksmiths' shops where the work is not heavy. Will cut $\frac{5}{8}$ in. round or square, or $\frac{3}{8}$ in. flat, and punch $\frac{3}{8}$ in. hole in $\frac{3}{8}$ in. iron.

Weighs 350 pounds.....Price $80 00

No. 3—a small machine for the use of coopers, pump manufacturers, gun shops, and other light work. Will cut $\frac{3}{8}$ in. round or $\frac{1}{4}$ in. flat, and punch $\frac{1}{4}$ in. hole in $\frac{1}{4}$ in. iron.

Weighs 75 pounds.....Price, with 4 Punches and Dies, $35 00

Power Machines manufactured to order only.

CLAIMS.

1. They have more power with same length of lever than others in use.
2. They will do same work in half the time required by other machines.
3. They do a greater variety of work than any other machine.
4. They act as a Shear and Punch at the same time, as both Shear and Punch are operated by the same lever.
5. It requires no change from punching one size hole to another, except changing the punches, the dies being set in a circular block revolving on a bolt at the center, bringing the right die under the punch in a moment.
6. There is nothing to get out of repair, except the chain, which any blacksmith can fix; the bearings being of steel, and as hard as fire and water can make them.

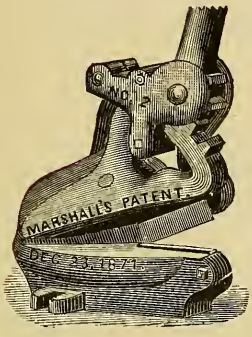
HERCULES IRON CUTTER.

No. 1	Weight,	16 lbs.	Cuts	⅜ × 2	in., or	½	in., round or square	.....	$25 00
2	"	165	"	⅝ × 3	"	¾	" "	.....	50 00
3	"	350	"	¾ × 4	"	1	" "	.....	75 00

This is by far the most powerful Iron Cutter in use which can be worked by hand, having three times the capacity of any other machine which sells at the same price. The No. 3 machine occupies a space of 12 × 30 in.; when in use, additional space must be had for the lever to work in. We send two sets of knives with each machine — one for square and flat, the other for round iron and steel. By using the knives adapted to it, round iron is cut without being flattened. One man can cut the largest size iron named above, but two would be required for steady work. It does not take a minute to change the knives, or to shift the machine from large to small sizes.

The Cutters are warranted to do all that is claimed for them.

MARSHALL'S PATENT SHEARS.



No. 1..... $35 00 each.
2..... 17 00 "

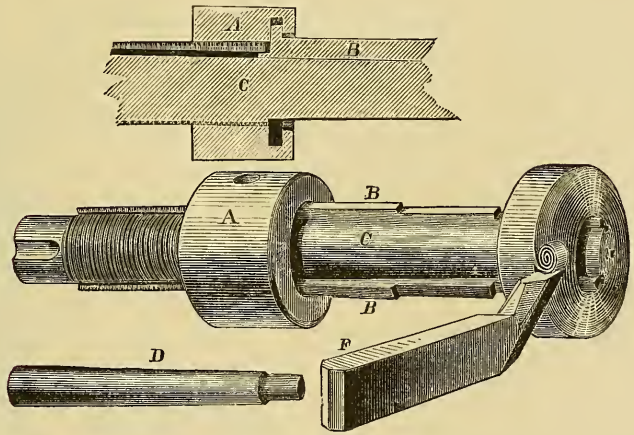
PRICE LIST OF PARTS FOR NO. 1 SHEAR.

Standard, $15 00; Blade, $8 00; Hood, $2 25; Lever Gear, $2 25; Strap, $0 75; Wrought Lever, $3 50; Knives, each, $1 50 and $3 00. Extra pair Knives ordered with the Machine, $2 50 per pair.

PRICE LIST OF PARTS FOR NO. 2 SHEAR.

Standard, $8 00; Blade, $5 00; Lever, $3 00; Hood, $1 50; Strap, $0 50; Knives, each, $1 00 and $2 00.

EXPANDING MANDREL OR ARBOR.



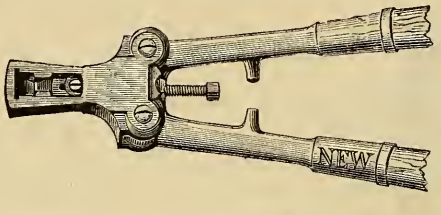
Le Count's Patent.

No. 1.	Takes any hole inclusive between				½	and 1	in	$12 00
2.	"	"	"	"	1	" 1½		16 00
3.	"	"	"	"	1½	" 2		20 00
4.	"	"	"	"	2	" 3		40 00
5.	"	"	"	"	3	" 4		60 00

EXPLANATION OF CUT.

C is the steel mandrel; B B are two of the three keys that are drawn up and pushed down by the nut, a groove is turned inside the nut A which catches the head of the key B, and thus draws them up to tighten the work; in the outside of the nut A is a taper hole which the pin D fits, and which answers for a wrench; this, like any mandrel, requires a true hole to make a true job. Very heavy cuts, on large diameters, can be done on it without slipping. F represents the tool operating on a piece of work.

BOLT AND RIVET CLIPPERS.



Johnson's, Mendham's and Chambers' Improved.

MUCH STRONGER, LARGER WEARING SURFACE, AND EASIER SHARPENED.

No. 1.	Clip ⅜ in. Bolt or less, for carriage work, harness makers, etc.,	each,	$7 50
2.	" ½ " " " " wheelwrights, machinists, founders, etc.		9 00
3.	" ⅝ " " " " car builders and heavy work generally		12 00

EXTRA PARTS.

CUTTERS.

For No. 1	each,	$0 40
" 2	"	0 50
" 3	"	0 75

RACKS.

For No. 1	each,	$0 50
" 2	"	0 75
" 3	"	1 00

SCREWS — STEEL ADJUSTING.

For No. 1	each,	$0 25
" 2	"	0 35
" 3	"	0 50

SLIDING CUTTER SCREWS.

For No. 1	each,	$0 10
" 2	"	0 15
" 3	"	0 25

HEADS.

For No. 1		$1 75
" 2		2 25
" 3		3 00

LEVERS.

For No. 1	each,	$0 50
" 2	"	0 75
" 3	"	1 00

LEVER SCREWS.

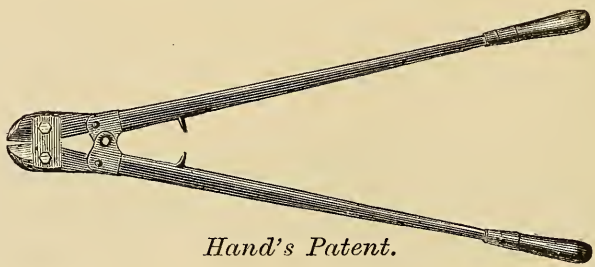
For No. 1	each,	$0 25
" 2	"	0 35
" 3	"	0 50

STATIONARY CUTTER SCREWS.

For No. 1	each,	$0 10
" 2	"	0 15
" 3	"	0 25

In ordering above *parts* for renewal, the Nos. (1, 2 and 3) indicate sizes, and should be given; and also, state whether wanted for the (New) or (Old) pattern.

The "New" pattern was put upon the market in spring of 1875, and is marked "New."



Hand's Patent.

Clip to $\frac{7}{16}$ Round Iron ..... $10 50 each.

DIFFERENTIAL PULLEY BLOCKS.

Weston's Patent.

PRICE LIST.

Size of Blocks.	No. of Feet of Chain each Block.	Price.	Additional Chain per Foot.
½ Ton	26 feet.	$25 00	40 cents.
1 "	30 "	30 00	45 "
1½ "	34 "	40 00	50 "
2 "	38 "	50 00	55 "

In ordering extra chains, allow four feet of chain for each foot of hoist.

Parts of Blocks of any of the patterns heretofore made, furnished to *order*.

They will hold a load suspended at any point, and not run down. One man can hoist 1000 pounds, with ease.

The lifting and lowering are effected by pulling opposite sides of the slack chain.

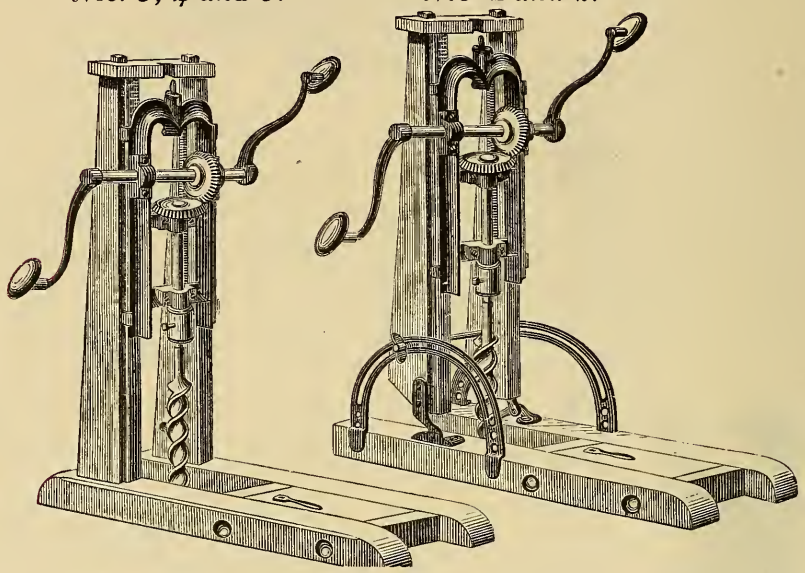
The chain will not twist or mount the sheaves.

They are adapted for all hoisting purposes, such as lifting at stations, forges, machine shops, quarries; for hoisting timber, stones, packages of merchandise; the suspending of scaffolding, vat covers, mill stones, shafting, etc.

IMPROVED BORING MACHINES.

GRADUATED WAYS.

Nos. 3, 4 and 5. *Nos. 1 and 2.*



No. 1.	Angular, Polished Gear, No Augers	$8 50
1.	" " " Douglass Mfg. Co's Augers	11 50
1.	" " " Cook's Augers, 1, 1½, 2, 18 qrs.	14 00
1.	" " " " " ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2, 41 qrs	21 00
2.	" No Augers	7 50
2.	" With Augers, 1, 1½, 2, 18 qrs.	10 50
2.	" " " ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2, 41 qrs	15 50
2.	" " Cook's Augers, 1, 1½, 2, 18 qrs.	13 50
3.	Extra Polished Gear, No Augers	7 00
3.	" " " Douglass Mfg. Co's Augers, 1, 1½, 2, 18 qrs.	10 50
3.	" " " Cook's Augers, 1, 1½, 2, 18 qrs.	12 50
3.	" " " " ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2, 41 qrs.	19 50
4.	Without Augers	6 00
4.	With Augers, 1, 1½, 2, 18 qrs	9 00
4.	" " 1, 1¼, 1½, 2, 23 qrs.	10 00
4.	" " ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2, 41 qrs	13 00
4.	With Cook's Augers, 1, 1½, 2, 18 qrs.	10 50
4.	" " " 1, 1¼, 1½, 2, 23 qrs.	12 50
5.	Without Augers	5 00
5.	With Augers, 1, 1½, 2, 18 qrs.	8 00
5.	" " 1, 1¼, 1½, 2, 23 qrs.	9 00
5.	" " ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2, 41 qrs.	12 00

Cook's Machine Augers.

In sets, 18 qrs.	$5 50
" 23 "	7 00
" 41 "	12 50

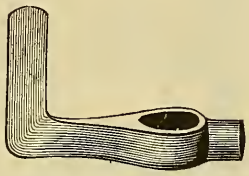
Douglass Mfg. Co's Machine Augers.

In sets, 18 qrs.	$3 50
" 23 "	4 50
" 41 "	8 00

NET PRICE LIST OF PARTS.—Frame, 80 cents; Spindle, 60 cents; Cross Shaft, 60 cents; Joints, 25 cents each; Semi-Circles, 20 cents each; Cog Wheels, 15 cents each; Handles, 15 cents each; Arbor Rack, 10 cents; Set Screw, 10 cents.

LATHE DOGS.

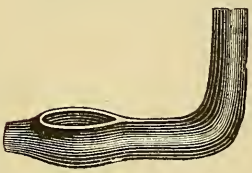
MALLEABLE IRON.



No. 1.

Sizes, ½, ⅝, ¾, 1, 1¼, 1½, 1¾, 2, 2¼, 2½, 2¾, 3 in. hole.

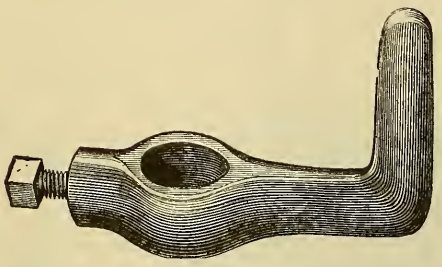
Price..... 15 cents per pound.



No. 2.

Sizes, ½, ⅝, ¾, 1, 1¼, 1½, 1¾, 2, 2¼, 2½, 2¾, 3, 3¼, 3½, 3¾, 4, 4¼, 4½, 4¾ and 5 in. hole.

Price..... 15 cents per pound.



No. 3. Fitted with Set Screw.

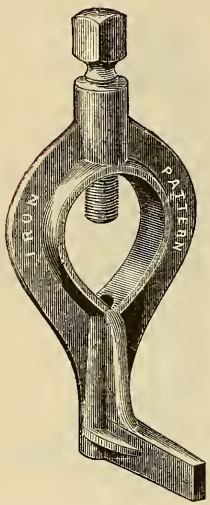
SIZE.	PER DOZ.	SIZE.	PER DOZ.	SIZE.	PER DOZ.	SIZE.	PER DOZ.
⅜ in.	$4 50	⅞ in.	$7 75	1¾ in.	$13 05	2¾ in.	$16 80
½	5 00	1	9 00	2	14 40	3	17 60
⅝	5 75	1¼	10 35	2¼	15 20		
¾	6 50	1½	11 70	2½	16 00		

Sizes above 3 in. furnished at proportionate prices.

One set of Eight Dogs, from ⅜ to 2 in..... $6 25

HOLLOW LATHE DOGS OR CARRIERS.

MALLEABLE IRON.



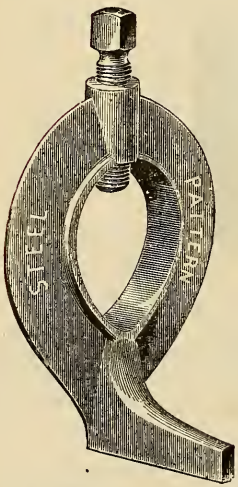
Le Count's Patent.

No.	¼ in.	$0 45
1.	⅜	45
2.	½	45
3.	¾	60
4.	1	70
5.	1¼	90
6.	1½	1 00
7.	1¾	1 20
8.	2	1 40
9.	2½	1 75
10.	3	2 00
11.	3½	2 40
12.	4	2 70
	5	4 00
	6	5 00

IN SETS.

From ⅜ to 2 in. inclusive, 8 small sizes	$6 50
" ⅜ " 4 " 12 "	15 00
" 3½ " 6 " 4 large "	8 85

NEW STEEL DOGS.



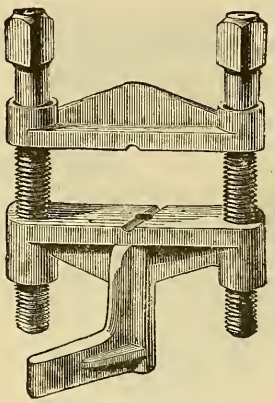
Le Count's Patent.

No. 1.	⅜ in.	$0 60
2.	½	70
3.	¾	80
4.	1	90
5.	1¼	1 10
6.	1½	1 20
7.	1¾	1 40
8.	2	1 60
9.	2½	2 90
10.	3	2 20
11.	3½	2 60
12.	4	2 90

IN SETS.

From ⅜ to 2 in. inclusive, 8 small sizes	$8 00
" ⅜ " 4 " 12 "	17 30
" 2½ " 4 " 4 large "	9 70

CLAMP DOG.



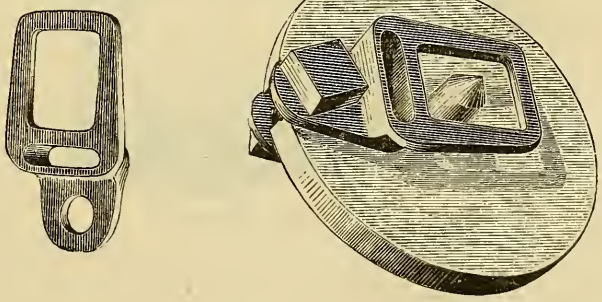
Le Count's Patent.

No. 1.	1 in. between screws	$1 00
2.	1½ " "	1 20
3.	2 " "	1 60
4.	3 " "	2 00
Full Set, including Nos. 1, 2, 3 and 4		5 25

Used for finished work and for many other purposes. They are well made, and of four sizes, taking anything from close to the sizes given.

BOLT DOG.

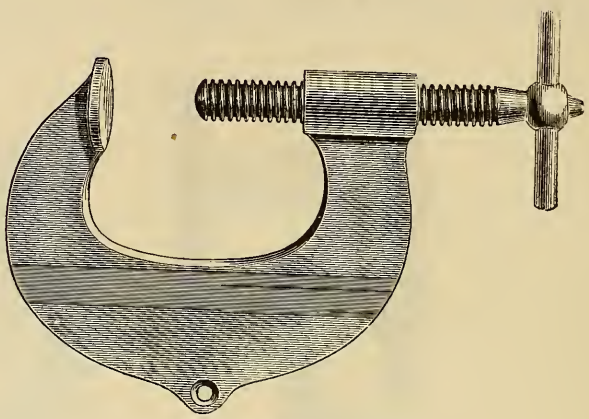
HARDENED.



Le Count's Patent.

Price for Set of 12 sizes from $\frac{5}{16}$ to 2 inches inclusive $3 00

STEEL CLAMP.



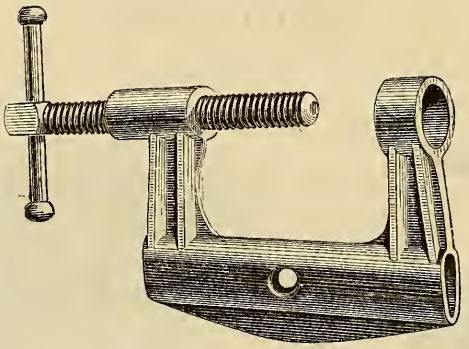
Le Count's Patent.

No. 1.	2 in.	$2 00
2.	3	2 25
3.	4	2 50
4.	5	2 75
5.	6	3 00
Full Set, including Nos. 1, 2, 3, 4 and 5		12 50

Above is very strong, with long perfect screws, hardened steel points.

MACHINIST'S CLAMP.

MALLEABLE IRON WITH HOLLOW BACKS.



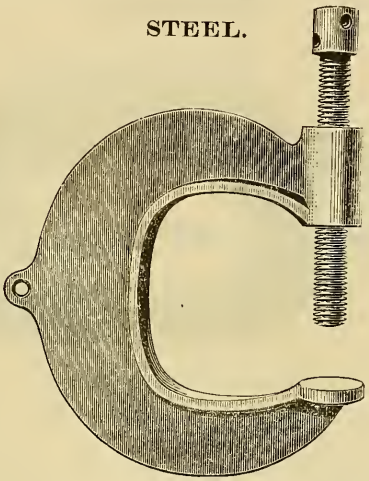
Le Count's Patent.

No. 1.	2 in.	$1 50
2.	3	1 75
3.	4	2 00
4.	5	2 25
5.	6	2 50
Full Set, including Nos. 1, 2, 3, 4 and 5		10 00

Above are strong enough for machinist's use.

BOILER MAKER'S CLAMP.

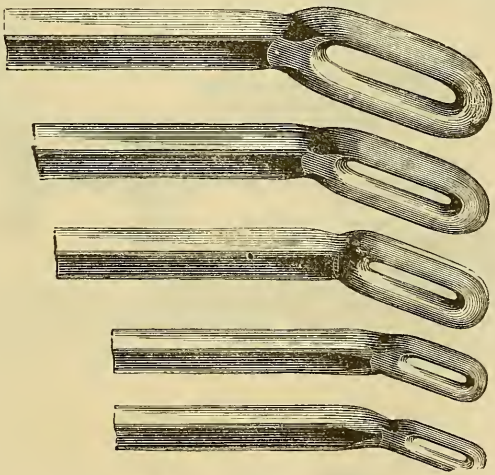
STEEL.



Le Count's Patent.

Made heavy and strong, with screw well fitted and hardened..... $5 00 each.

STEEL CHUCK DRILL HOLDERS.

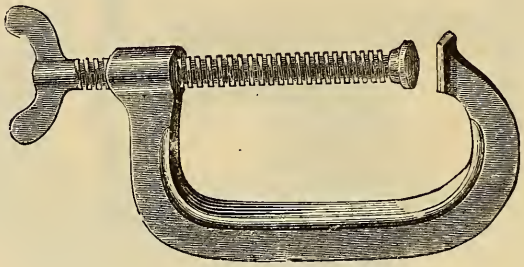


Le Count's Patent.

No. 1.	Taking Drills from 3/8 to 9/16,	$0 75	
2.	" " " 9/16 " 3/4,	75	
3.	" " " 3/4 "1 1/8,	90	
No. 4.	Taking Drills from 1 1/8 to 1 5/8,	$1 00	
5.	" " " 1 5/8 " 2,	1 00	
	Full Set, including Nos. 1, 2, 3, 4 & 5,	4 00	

The above are made more particularly to go with Le Count's Patent Drill for Lathe use, but will answer for any Flat Drill. They are of five sizes, planed on the bottom to give a good bearing in Tool post; the slot is rounded every way, to avoid corners that interfere with centering the Drill.

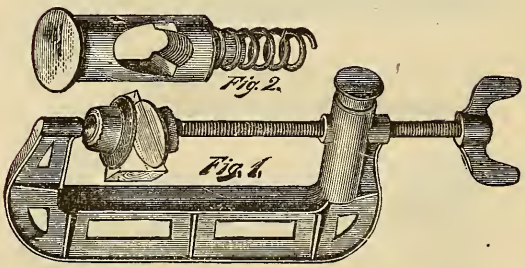
CLAMPS.



Warner's Plain Clamp.

Nos	00	0	1	2	3	4	5	6	
Opens	2	2½	3	4	5½	7	8	10	in.
Price	$2 00	3 00	4 00	6 00	7 50	9 00	11 00	13 00	per dozen.

Nos. 00, 0, 1 and 2 put up in boxes of 1 dozen each.
3 and 4 " " " ½ " "
5 " 6 " " bundles of ½ " "

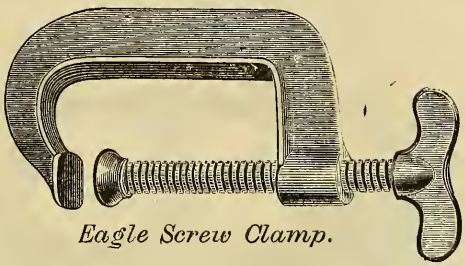


Silver & Deming's Patent Adjustable Clamp.

Nos	3	4	5	7	9	
Opens	3	4	5	7	9	in.
Price	$9 00	11 00	13 00	15 50	18 00	per dozen.

The above is an Adjustable Clamp, suitable for the use of carriage makers, cabinet makers and wood workers of every class. The Jaws readily adjust themselves to any desired angle, making it useful under all circumstances, whether the work is regular in form or not. The Open or Adjustable Nut, as represented in Fig. 2, enables the operator to adjust the Screw to the work with facility and ease.

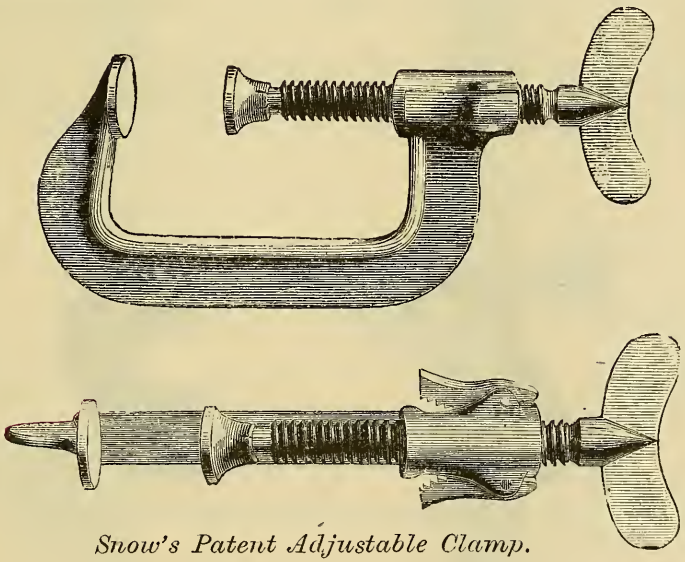
CLAMPS.



Eagle Screw Clamp.

Nos.	1	2	3	4	5	6	7	8	
Opens,	2½	3	4	5	6	7	8	10	in.
Price,	$3 50	4 00	6 00	7 00	8 75	9 75	11 00	13 00	per doz.

Above Clamps are made of Malleable Iron, and Ribbed on the sides, making them strong and durable.

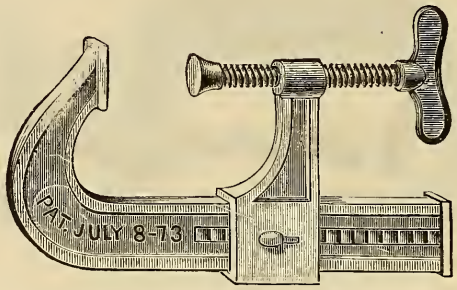


Snow's Patent Adjustable Clamp.

Opens,	2	3	4	5	6	7	8	in.
Price,	$9 75	11 25	12 75	14 75	22 00	25 00	29 00	per dozen.

By placing the thumb and forefinger on the levers the Jaws are opened, allowing the Screw to move back to any required position without turning, and in same manner the Screw can be moved forward without the use of the thumb and forefinger, as the Screw is cut with a ratchet thread.

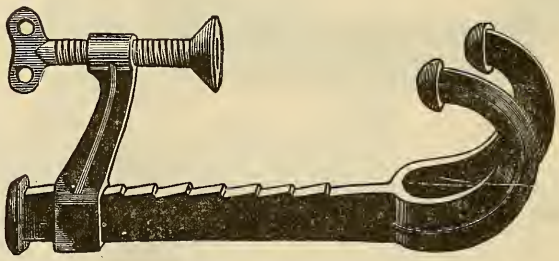
CLAMPS.



Walker's Patent Adjustable Clamp.

Nos	1	2	3	4
Opens	4	6	8¾	11½ in.
Price	$6 00	8 00	10 50	13 50 per dozen.

These Clamps are adjusted by means of a Ratchet, operated by the Thumb Piece on the Jaw, and are instantly opened or closed to any desired point, with ease, and the method of their construction renders them as strong and durable as any now made.



Body Maker's Corner Clamp.

Opens	5	7	9 in.
Price	$9 00	12 00	15 00 per dozen.

This Clamp being double pronged, is particularly adapted to holding corners, besides having double advantages when used in any other position.

It is easily adjusted, and does not get out of order; advantages which are obvious to all mechanics using them.

CABINET MAKER'S CLAMPS.

Ordinary Pattern.

2 feet inside of the Jaws	$9 00 per dozen.
3 " " "	10 00 " "
4 " " "	11 00 " "
5 " " "	12 00 " "

Improved Pattern.

With Iron Head and Jaws.

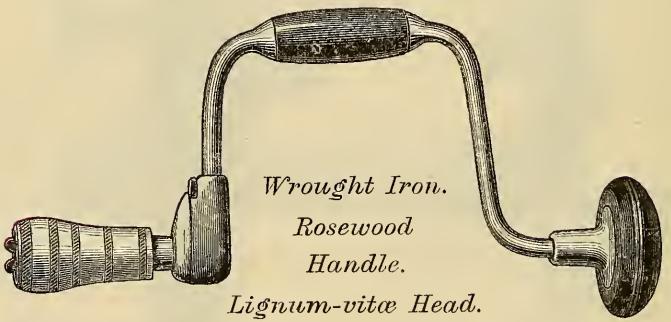
2 feet inside of the Jaws	$22 00 per dozen.
3 " " "	24 00 " "
4 " " "	26 00 " "
5 " " "	28 00 " "

BARBER'S RATCHET BRACE.

No. 31.	12 in. Sweep	$39 00	per dozen.
32.	10 "	36 00	"
33.	8 "	33 00	"

This is the perfection of a Bit Brace, having a Regular Barber Chuck with Steel Jaws, and also Dolan's Patent Ratchet Attachment, to be used in places where there is not room to revolve the sweep. A slight back-and-forth motion will drive the Bit in or out. All the working parts are made of steel, and the whole Brace is beautifully finished.

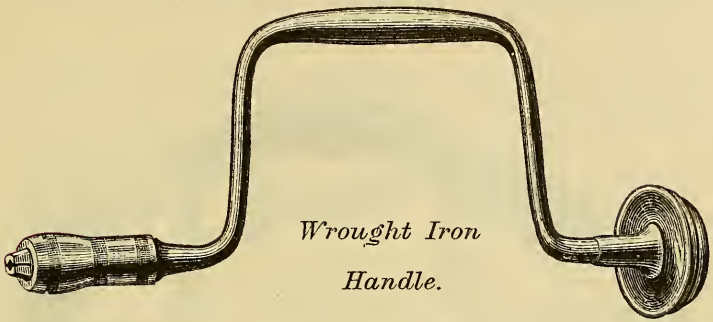
BACKUS RATCHET BRACE.



No. 108.	8 in. Sweep	$33 00	per dozen.
110.	10 "	36 00	"
112.	12 "	39 00	"

By moving the lever it will ratchet either to the right or left, or it can be used as a common Brace. The Pawls, Cam and Ratchet are encased so no dirt or dust can come in contact with them, and all working parts are hardened.

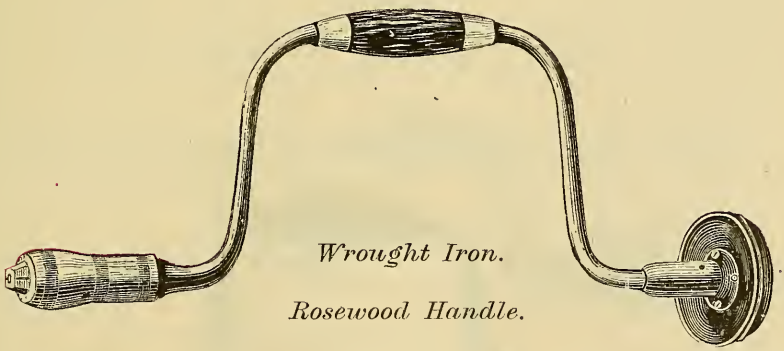
BARBER'S IMPROVED BIT BRACE.



Wrought Iron Handle.

Lignum-vitæ Head.

No. 0.	14 in. sweep	$33 00	per dozen.
1.	12 "	30 00	"
2.	10 "	27 00	"
3.	8 "	24 00	"
4.	6 "	21 00	"



Wrought Iron.

Rosewood Handle.

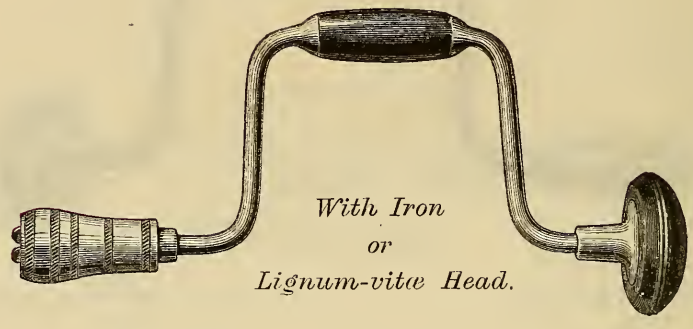
Lignum-vitæ Head and Steel Jaws.

No. 10.	14 in. sweep	$33 00	per dozen.
11.	12 "	30 00	"
12.	10 "	27 00	"
13.	8 "	24 00	"
14.	6 "	21 00	"
15.	4 "	20 00	"

With Boxwood Head and Handle.

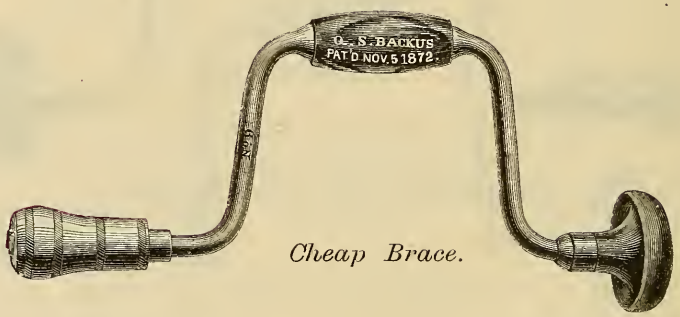
No. 22.	12 in. sweep	$14 00	per dozen.
23.	8 "	13 00	"

BACKUS PATENT BIT BRACES.



With Iron
or
Lignum-vitæ Head.

No. 6.	6 in. Sweep	$21 00	per dozen.
8.	8 "	24 00	"
10.	10 "	27 00	"
12.	12 "	30 00	"
14.	14 "	33 00	"

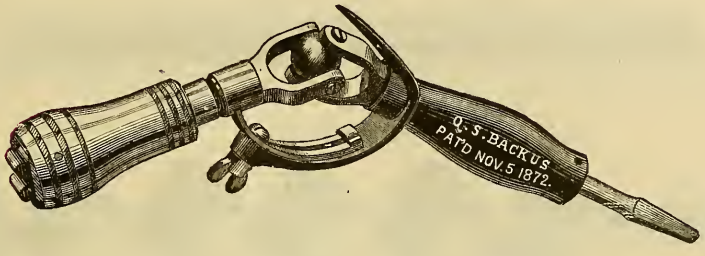


Cheap Brace.

WITH BOXWOOD HEAD AND HANDLE.

No. 9.	9 in. Sweep	$15 00	per dozen.
11.	11 "	16 00	"

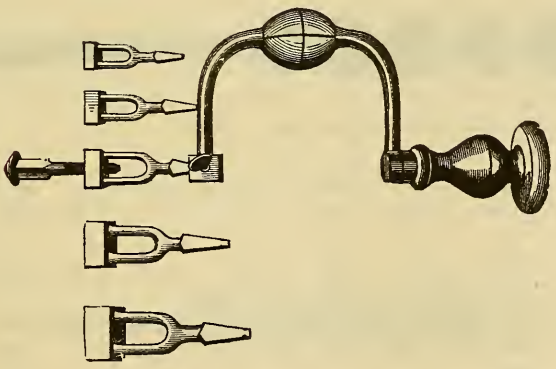
BACKUS ANGULAR BORER.



Price..... $24 00 per dozen.

Can be used in any brace, at any degree of angle. Can bore in a corner as readily as a common brace; bores straight, turning clear around without stopping to ratchet. Any part can be duplicated by mail, without sending the whole tool back.

BRACE WRENCHES.

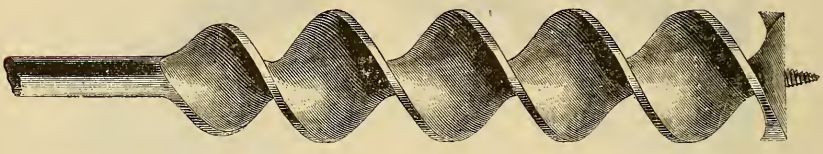


Made of Best Malleable Iron.

Five in a Set. Sizes, 3/8, 1/2, 5/8, 3/4 and 7/8 in. Price, $1 00 per Set.

Especially adapted for Blacksmiths' and Carriage Makers' use. More work can be done in five minutes time with this Wrench than can be done in thirty minutes with the ordinary screw wrench.

AUGERS AND BITS.



Cast Steel Cut Augers.

		½	⅝	¾	⅞	1	in.
Cast Steel Cut,	Nut,	$5 00	6 00	7 50	8 00	8 50	per dozen.
" "	Blued,	4 25	5 00	5 75	6 75	6 75	"
		1⅛	1¼	1½	1¾	2	in.
Cast Steel Cut,	Nut,	$10 00	10 50	12 00	14 00	17 00	per dozen.
" "	Blued,	7 75	8 00	9 50	11 00	12 50	"

Cast Steel Bits.

	3	4	5	6	7	8	9	10–16	in.
Price,	$3 50	3 00	3 00	3 25	3 25	3 50	3 50	4 00	per dozen.
	11	12	13	14	15	16	18	20–16	in.
Price,	$4 25	4 50	4 75	5 00	5 50	6 00	7 00	8 00	per dozen.

Assorted Sizes, 21 qrs.	3 25	per set.
" " 24 "	3 50	"
" " 32½ "	4 50	"
Handled Auger Bits	3 50	per dozen.

Dowell Bits.

	4	5	6	7	8–16	in.
Price	$2 00	2 00	2 50	2 50	2 50	per dozen.

AUGERS AND BITS.

Short Bright.

	½	⅝	¾	⅞	1 in.
Short Bright Augers	$4 00	4 50	5 25	6 00	6 50 per dozen.

	1⅛	1¼	1½	1¾	2 in.
" " "	$6 75	7 50	8 50	10 00	11 50 per dozen.

Ring.

	½	⅝	¾	⅞	1	1⅛	1¼	1½	1¾	2	in.
Short Ring,	$4 50	5 50	7 00	7 50	8 00	9 00	9 50	11 00	12 00	15 00	per dozen.
Long "	5 00	6 00	7 50	8 00	8 50	10 00	10 50	12 00	14 00	17 00	"
Black Lip "	5 25	6 25	7 75	8 75	8 75	9 50	9 50	12 50	14 50	17 50	"
Bright " "	5 50	6 50	8 00	9 00	9 50	11 00	11 50	13 00	15 00	18 00	"
Rafting,	--	--	--	--	--	--	--	28 00	33 00	38 00	"

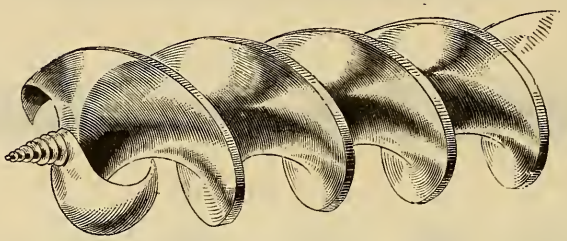
Extra large sizes made to order.

D. Mf'g. Co's Boring Machine Augers.

	½	⅝	¾	⅞	1	1⅛	1¼	1½	1¾	2	in.
Price,	$5 00	6 00	7 00	8 00	9 00	11 00	11 00	13 00	16 00	18 00	per dozen.

In Sets, assorted, 18 qrs., $3 50; 23 qrs., 4 50; 41 qrs., 8 00; 28 qrs., 5 25 per dozen.

AUGERS AND BITS.



Cook's Patent.

COOK'S CAST STEEL CARPENTER'S AUGERS.

½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝	
$7 50	9 00	11 00	12 75	14 75	16 50	18 00	21 50	21 50	24 00	per dozen.

1¾	1⅞	2	2¼	2½	2¾	3	
$24 00	28 50	28 50	32 00	36 00	42 00	42 00	per dozen.

In Sets, assorted, with Rosewood Handles, in Wood Boxes, 41 qrs., $14 50; 28 qrs., $10 00 per Set.

COOK'S CAST STEEL MILLWRIGHT'S AUGERS.

½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	
$12 00	15 00	18 00	21 00	24 00	28 00	30 00	36 00	36 00	per dozen.

1⅝	1¾	1⅞	2	
$42 00	42 00	48 00	48 00	per dozen.

In Sets, assorted, with Rosewood Handles, in Wood Boxes, 41 qrs., $22 50; 28 qrs., $16 00 per Set.

Extra Black Walnut Cases, in Sets, ½ to 2, 41 qrs., with Handles complete, $25 00 per Set.

COOK'S MACHINE AUGERS.

½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝	
$7 50	9 00	11 00	12 75	14 75	16 50	18 00	21 50	21 50	24 00	per dozen.

1¾	1⅞	2	
$24 00	28 50	28 50	per dozen.

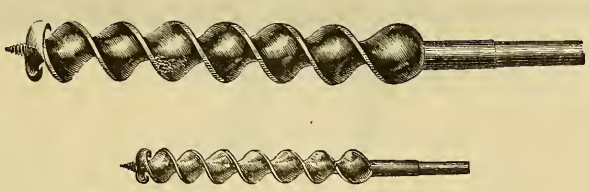
In Sets, assorted, 18 qrs., $5 50; 23 qrs., $7 00; 41 qrs., $12 50 per set.

COOK'S PLUG BITS.

4	5	6	7	8	9	10	11	12	13	14	15–16	
$4 25	4 50	5 00	5 75	6 00	6 75	7 25	8 00	8 75	9 50	10 25	11 00	per dozen.

16	18	20	22	54	26	28	30	32–16	
$11 75	13 25	13 75	16 25	17 25	18 75	20 25	21 75	23 75	"

MACHINE BITS.



Cook's Patent Cast Steel Machine Bits.

Shank — ½ in. diameter, 2 in. long. Length of Twist — 3, 4, 6, 9 and 12 in.

4	5	6	7	8	9	10	11	12	13	14	15-16	
$5 25	6 50	7 50	9 00	10 25	11 25	12 75	13 25	15 00	16 50	17 75	18 75	per dozen.

16	17	18	19	20	21	22	23	24	25	26–16	
$20 25	22 75	22 75	28 25	28 25	30 25	30 25	32 25	32 25	34 75	34 75	"

27	28	29	30	31	32–16	
$35 25	35 25	36 75	36 75	37 75	37 75	per dozen.

D. Mfg. Co's Spur Cast Steel Machine Bits.

Shank — ½ in. diameter, 2 in. long. Length of Twist — 3, 4, 6, 9 and 12 in.

4	5	6	7	8	9	10	11	12	13	14	15–16	
$5 25	6 50	7 50	9 00	10 25	11 25	12 75	13 25	15 00	16 50	17 75	18 75	per dozen.

16	17	18	19	20	21	22	23	24	25	26–16	
$20 25	22 75	22 75	28 25	28 25	30 25	30 25	32 25	32 25	34 75	34 75	"

27	28	29	30	31	32–16	
$35 25	35 25	36 75	36 75	37 75	37 75	per dozen.

AUGERS AND BITS.

D Mfg. Co's Car Bits.

12 INCH TWIST.

4	5	6	7	8	9	10	11	12–16
$6 50	6 50	7 50	9 00	10 25	11 25	12 75	13 25	15 50 per dozen.

13	14	15	16–16
$16 50	17 75	18 75	20 50 per dozen.

Assorted in Sets,	32½ qrs.	24 qrs.	21 qrs.
	$14 00	10 50	9 50 per dozen.

Cook's Car Bits, both 9 and 12 in. twist, same list as above.

Cook's Cast Steel Bits.

4	5	6	7	8	9	10	11	12	13	14	15–16
$4 25	4 50	5 00	5 75	6 00	6 75	7 25	8 00	8 75	9 50	10 25	11 00 per dozen.

16	17	18	19	20	22	24	26	28	30	32–16
$11 75	13 25	13 25	13 75	13 75	16 25	17 25	18 75	20 25	21 75	23 75 "

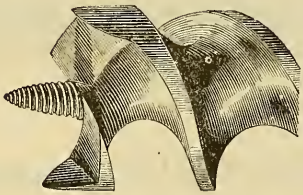
Assorted in Sets,	4 to 16–16	4 to 12–16	4 to 12–16
	32½ qrs.	24 qrs.	21 qrs.
	$8 25	6 75	6 00 per set.

Patent Double Cut Gimlet Bits.

Nos.	1	2	3	4	5	6
	$1 00	1 13	1 25	1 38	1 50	1 63 per dozen.

Assorted, Nos. 1 to 6 ..... 1 25 "

AUGER BITS.



Jenning's Cast Steel Auger Bits.

4	5	6	7	8	9	10	11	12–16
$3 20	3 60	4 00	4 60	5 00	5 40	5 80	6 40	7 00 per dozen.

13	14	15	16–16
7 60	8 20	8 80	9 40 per dozen.

In Sets, assorted, of 24 qrs. ..... $5 40 per set.
" " " 32½ " ..... 6 60 "

Snell's Cast Steel Auger Bits.

3	4	5	6	7	8	9	10	11–16
$3 50	3 00	3 00	3 25	3 25	3 50	3 75	4 25	4 50 per dozen.

12	13	14	15	16–16
$4 75	5 00	5 50	6 00	6 50 per dozen.

In Sets, assorted, of 24 qrs. ..... $3 50 per set.
" " " 32½ " ..... 4 50 "

Diamond Point Auger Bits.

GRISWOLD'S PATENT.

3	4	5	6	7	8	9	10	11–16
$3 50	2 75	2 88	3 24	3 78	4 08	4 58	4 80	5 28 per dozen.

12	13	14	15	16–16
$5 76	6 24	6 72	7 20	7 68 per dozen.

In Sets, assorted, of 24 qrs. ..... $4 12 per set.
" " " 32½ " ..... 5 40 "

SHIP AUGERS AND BITS.

With Screw.

Without Screw.

SHIP AUGERS.

½ in. and under	$7 50	per dozen.
4½ " ⅝ in.	9 00	"
5½ " ⅝	10 50	"
6½ " ⅞	12 00	"
7½ " ⅞	13 50	"
8½ " ⅞	15 00	"
9½ " 1 0/8	16 50	"
10½ " 1 1/8	18 00	"
11½ " 1 2/8	21 00	"
12½ " 1 3/8	24 00	"
13½ " 1 4/8	25 00	"
14½ " 1 5/8	27 00	"
15½ " 1 6/8	31 50	"
16½ " 1 7/8	48 00	"
17½ " 1 8/8	60 00	"
18½ " 1 9/8	72 00	"
19½ " 2 0/8	84 00	"
20½ " 2 1/8	96 00	"
21½ " 2 2/8	108 00	"
22½ " 2 3/8	120 00	"
23½ " 2 4/8	132 00	"

18 in. twist — Sizes, ½ in 1½ in.	$0 40	per quarter.
20 " " ½ 1½	48	"

SHIP AUGER BITS.

½ in. and under	$6 00	per dozen.

CHISELS.

Socket Firmers.

5 In. Blades.

	1/8	1/4	3/8	1/2	5/8	3/4	in.
Price	$8 00	8 00	8 00	9 00	10 00	11 00	per dozen.
	7/8	1	1 1/4	1 1/2	1 3/4	2	in.
Price	$11 00	12 00	13 00	14 00	15 00	16 00	per dozen.

Assorted 8 in a Set, 1/4 to 2 in.—one each 1/4, 1/2, 3/4, 1, 1 1/4, 1 1/2, 1 3/4, 2 in. $8 25
" 9 " " 1/8 " 1 1/2 " 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 1, 1 1/4, 1 1/2 in. 7 75
" 12 " " 1/8 " 2 " of every size 11 25

Socket Framing.

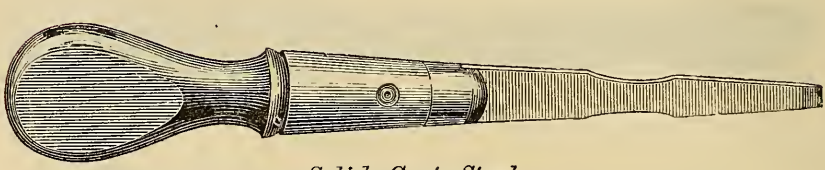
8 In. Blades.

	1/4	5/16	3/8	7/16	1/2	5/8	in.
Price	$12 00	12 00	12 00	12 00	12 00	13 00	per dozen.
	3/4	7/8	1	1 1/8	1 1/4	1 1/2	in.
Price	$14 00	15 00	16 00	18 00	18 00	20 00	per dozen.
	1 3/4	2	2 1/4	2 1/2	2 3/4	3	in.
Price	$22 00	24 00	28 00	32 00	36 00	40 00	per dozen.

Corner.

	3/4	7/8	1	1 1/8	1 1/4	in.
Price	$28 00	30 00	32 00	34 00	36 00	per dozen.

SCREW DRIVERS.



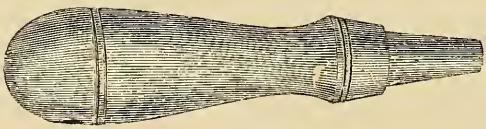
Solid Cast Steel.

Sizes,	1½	2	3	4	5	6	7	8	10	in.
Price,	$1 00	1 50	2 00	2 50	3 00	3 50	4 00	4 75	6 00	per dozen.

CHISEL HANDLES.

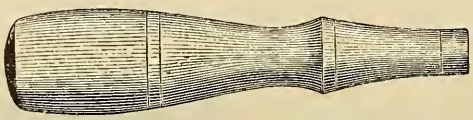
Socket Framing Chisel Handle.

Polished Hickory, Iron Ferrules, assorted, 1 dozen in a box..... $6 00 per gross.



Socket Firmer Chisel Handle.

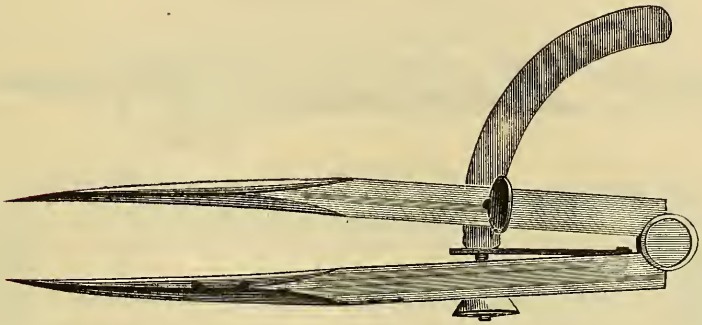
Polished Hickory, assorted, 3 dozen in a box..... $3 50 per gross.
" Apple, " 3 " " " ..... 4 50 "



Firmer Chisel Handle.

Polished Hickory, assorted, 1 dozen in a box..... $5 25 per gross.
" " " large, 1 " " " ..... 6 25 "
" Apple, " 1 " " " ..... 6 00 "
" " " 1 " " " ..... 7 00 "

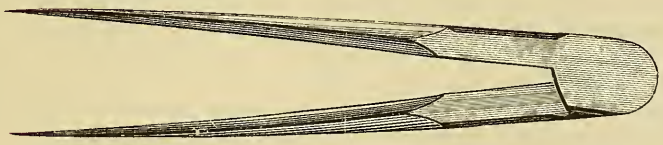
CAST STEEL DIVIDERS.



Fine Polished, with Set Screw.

Length	5	6	7	8	9	10	12	15	18	in.
Price	$7 00	7 50	9 00	10 25	12 50	13 75	16 50	27 50	41 25	per dozen.

COMPASSES.



Best Cast Steel.

Length	3	4	5	6	7	8	9	10	in.
Price	$4 25	4 50	4 80	5 50	6 25	7 50	9 00	10 30	per dozen.

SCREW DRIVER BITS.

Best Cast Steel.

Price ..... $1 50 per dozen.

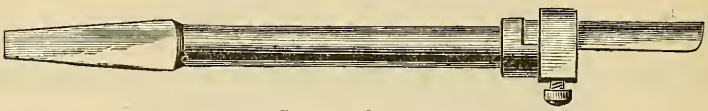
PLUG CUTTER AND ADJUSTABLE BIT.

JONAS' PATENT.

Adjustable Bit.

The above can be fitted to any ordinary Brace, having a Gimlet Bit at the lower end for boring the hole for screws or screw bolts, and a Countersink Bit for sinking the screw head, and inlaying the Plug.

Both Bits are held firmly in position by a Set-screw, and can be *adjusted independently of each other to any depth*, either for a long or short screw, deep or shallow countersink.



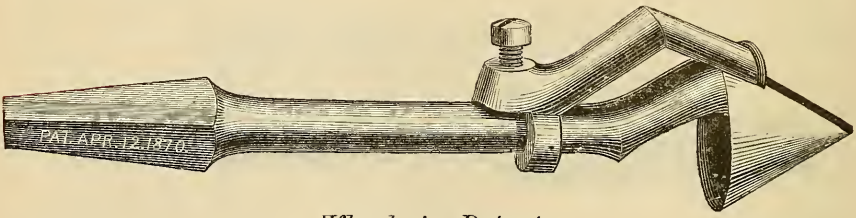
Plug Cutter.

The above Cutter can be fitted to any ordinary Brace, being made semi-circular at the lower end, with a Gauge and Set-screw to expand and contract, so that a plug can be made the same size as the Countersink of the Bit. These tools are useful on carriages and coach bodies, where screws are used, making more complete and finished work by those using them. After the screw-holes and countersiuk are cut to the desired depth, and the screw is inserted and the plug is driven in over the head of the screw, apply glue also. The plug becomes nearly as firm as the wood itself, and will make a very neat, clean finish.

The cost of these tools is so low that all good mechanics will use them.

Price of the Bit and Plug Cutter, $1 75 per pair. Packed in boxes of 1 pair each.

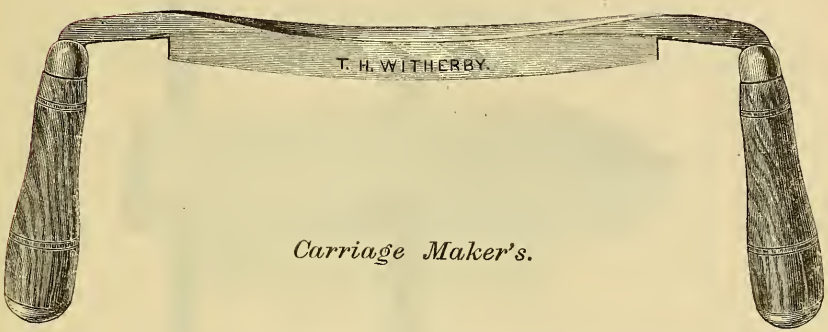
COUNTERSINK FOR WOOD.



Wheeler's Patent.

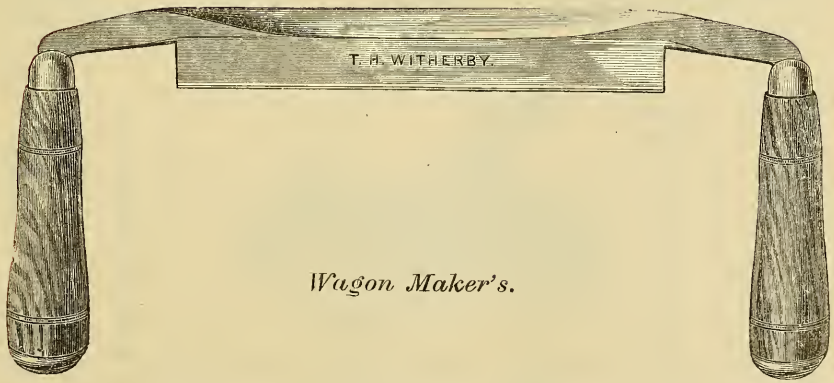
Price, with Gauge	$5 00	per dozen.
" without Gauge	4 00	"

DRAWING KNIVES.



Carriage Maker's.

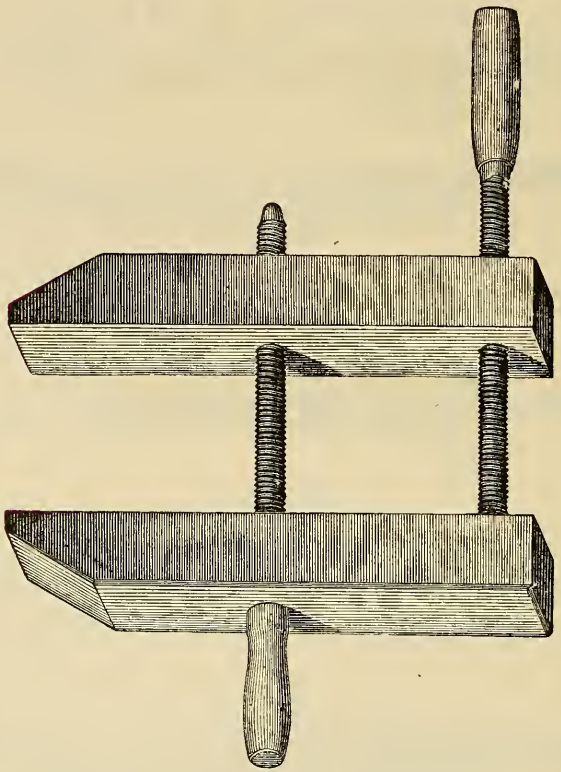
Length	6	7	8	9	10	11	12	in.
Price	$18 00	19 00	20 00	21 00	22 00	23 50	26 00	per dozen.



Wagon Maker's.

Length	6	7	8	9	10	11	12	in.
Price	$18 00	19 00	20 00	21 00	22 00	23 50	26 00	per dozen.

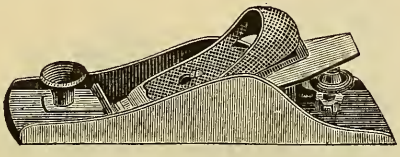
HAND SCREWS.



DIAM. OF SCREWS.	LENGTH OF SCREWS.	LENGTH OF JAWS.	SIZE OF JAWS.	
½ in	10 in	8 in	1¼ × 1¼ in	$ 2 75 per dozen.
⅝	10	8½	1⅜ × 1⅜	3 00 "
¾	12	10	1⅝ × 1⅝	3 75 "
⅞	16	14	2 × 2	5 25 "
1	18	16	2⅜ × 2⅜	7 00 "
1⅛	20	18	2⅝ × 2⅝	9 00 "
1¼	24	20	2⅞ × 2⅞	11 00 "
1¼	30	22	3 × 3	13 00 "

Hand Screws ½, ⅝ and ¾ in. are packed 2 Doz. in a Case. All other sizes, 1 Doz. in a Case.

BAILEY'S PATENT PLANES.



Adjustable Block Plane.

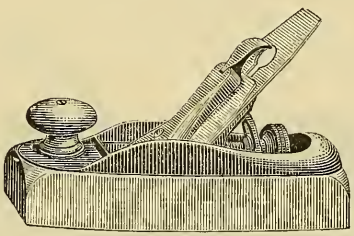
No. 9½. Excelsior Block Plane, 6 inches in length, 1¾ in. Cutter.....$2 50 each.
15. " " 7 " 1¾ " ..... 3 00 "

Adjustable Block Plane.

No. 9¾. Excelsior Block Plane, with Rosewood Handle, 6 inches in length, 1¾ in. Cutter, $3 00 each.

No. 15½. Excelsior Block Plane, with Rosewood Handle, 7 inches in length, 1¾ in. Cutter, $3 50 each.

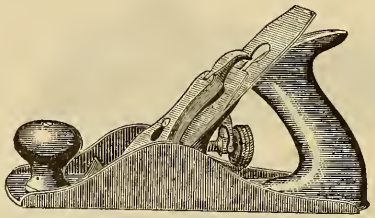
These Block Planes are adjusted by a Screw and Lever movement. The Handles to Nos. 9¾ and 15½ are secured by the use of a Thumb-Nut, and may be easily attached to or liberated from the Plane, as the convenience of the workman may require.



Wood Plane.

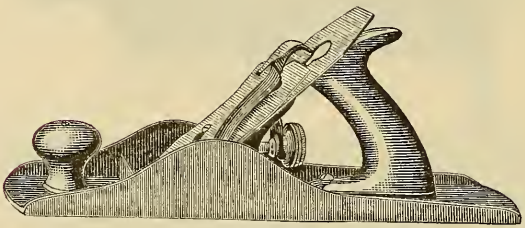
No. 21.....Smooth Plane, 7 inches in length, 1¾ in. Cutter ..... $3 50 each.
22..... " " 8 " 1¾ " ..... 3 50 "
23 ..... " " 9 " 1¾ " ..... 3 50 "
24..... " " 8 " 2 " ..... 3 75 "
25.....Block " 9½ " 1¾ " ..... 3 75 "

BAILEY'S PATENT PLANES.



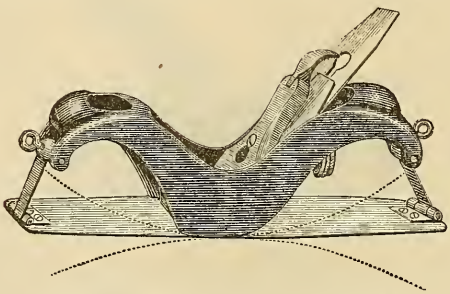
Iron Plane.

No. 1.	Smooth Plane,	5½	in. in length.	1¼	in. Cutter	$4 00	each.
2.	" "	7	"	1⅝	"	4 50	"
3.	" "	8	"	1¾	"	5 00	"
4.	" "	9	"	2	"	5 50	"



Iron Plane.

No. 5.	Jack Plane,	14	in. in length.	2	in. Cutter	$6 00	each.
6.	Fore "	18	"	2⅜	"	7 00	"
7.	Jointer "	22	"	2⅜	"	8 00	"
8.	" "	24	"	2⅝	"	9 00	"
9.	Block "	10	"	2	"	8 50	"
10.	Carriage Makers' Rabbet Plane,	14		2⅛	in. Cutter	7 00	"

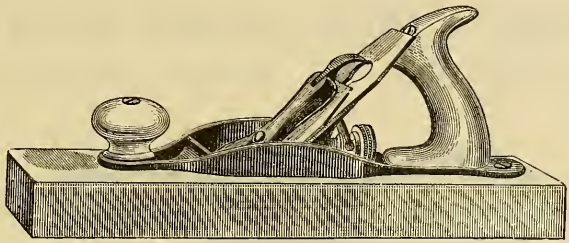


Adjustable Circular Plane.

No. 13. 1¾ in. Cutter ..... $6 00 each.

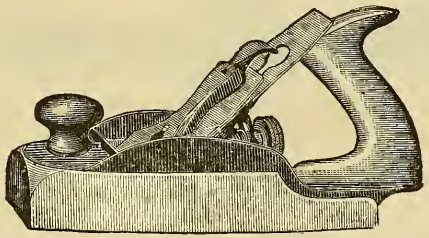
This Plane has a Flexible Steel Face, and by means of the Thumb-screws at each end of the Stock, can be easily adapted to plane circular work—either concave or convex.

BAILEY'S PATENT PLANES.



Wood Plane.

No. 26, Jack Plane,	15	inches in length,	2	in. Cutter		$4 00	each.
27, " "	15	" "	2 1/8	"		4 25	"
28, Fore "	18	" "	2 3/8	"		4 50	"
29, " "	20	" "	2 3/8	"		4 50	"
30, Jointer "	22	" "	2 3/4	"		4 75	"
31, " "	24	" "	2 3/8	"		4 75	"
32, " "	26	" "	2 5/8	"		5 25	"
33, " "	28	" "	2 5/8	"		5 25	"
34, " "	30	" "	2 5/8	"		5 50	"



Wood Plane.

No. 35, Handle Smooth,	9	inches in length,	2	in. Cutter		$4 50	each.
36, " "	10	" "	2 3/8	"		4 75	"
37, Jenny "	13	" "	2 5/8	"		5 00	"

☞ Extra plane-woods of every style can be supplied cheaply.

EXPLANATIONS.

The Plane-Iron is secured in its position by means of the Iron Lever with a Cam and Thumb-latch at its upper end. A Screw passing down into the iron bed-piece below, serves as a fulcrum on which the Lever acts in clamping down the Plane-Iron.

The Lever may be put in position or removed at pleasure without the use of any tool, it being properly slotted for this purpose, and the pressure required for the best working of the Plane can be obtained at any time by driving or slacking the central Screw upon which the Lever operates.

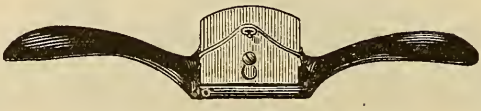
The Thumb-screw, located under the iron bed-piece, and just in front of the handle to the Plane, operates a simple device, by means of which the Plane-Iron can be easily set forward or withdrawn while it is still clamped down to the bed-piece, and without removing the hands from the Plane or the Plane from the work, any desired thickness of shaving may be obtained with perfect accuracy.

The bed-piece upon which the Plane-Iron rests is attached to the stock of the Plane by two screws, and can be moved forward or backward sufficiently to open or close the mouth of the Plane as the owner may desire.

These tools meet with universal approbation from the best mechanics. For beauty of style and finish they are unequaled, and the great convenience in operating renders them the cheapest Planes in use. They are *self-adjusting* in every respect, and each part being made *interchangeable*, can be replaced at a trifling expense.

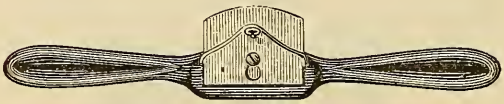
Every Carpenter, Cabinet-maker, Car-builder or other skilled wood-worker, will find it economy to use these Planes.

BAILEY'S IRON SPOKE SHAVES.



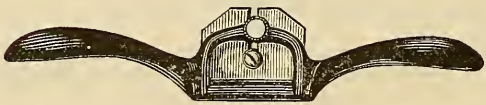
No. 51. Raised Handle.

Patent Double Iron, 10 in., 2⅛ in. Cutter ..... $4 50 per doz



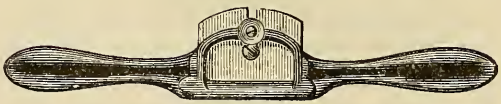
No. 52. Straight Handle.

Patent Double Iron, 10 in., 2⅛ in. Cutter ..... $4 50 per doz.



No. 53. Raised Handle.

Patent Adjustable Iron, 10 in., 2⅛ in. Cutter ..... $5 50 per doz.



No. 54. Straight Handle.

Patent Adjustable Iron, 10 in., 2⅛ in. Cutter ..... $5 50 per doz.

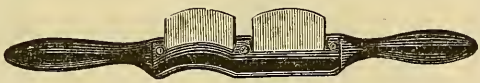
BAILEY'S IRON SPOKE SHAVES.

No. 55. Raised Handle.

Model Double Iron, Hollow Face. 10 in. 2⅛ in. Cutter ..... $4 50 per doz.

No. 58. Straight Handle.

Model Double Iron Shave. 10 in. 2⅛ in. Cutter ..... $4 50 per doz.
No. 59. Single " 10 2⅛ " ..... 4 50 "



No. 60. Hollow and Straight.

Double Cutter. 10 in. 1½ in. each Cutter ..... $5 50 per doz.

LIST OF SPOKE SHAVE CUTTERS.

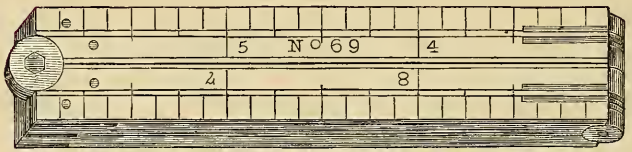
Nos. 51 52 53 54 55 58 59 ..... $2 00 per doz.
60 in pairs ..... 3 00 "

The above Spoke Shaves are considered superior in style, quality and finish to any now in the market. The Cutters are made of the best English Cast Steel, and are in perfect working order when sent from the factory.

STANLEY'S BOXWOOD RULES.

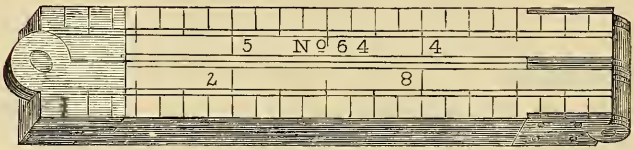
PRICE LIST.

One Foot, Four Fold, Narrow.



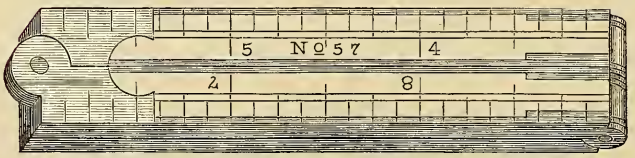
PER DOZ.

No. 69. Round Joint, Middle Plates, 8ths and 16ths of in., ⅝ in wide..... $3 00



PER DOZ.

No. 65. Square Joint, Middle Plates, 8ths and 16ths of in. ⅝ in. wide.... $3 50
64. " " Edge " " " " ⅝ " 5 00
65½ " " Bound, " " " ⅝ " 11 00

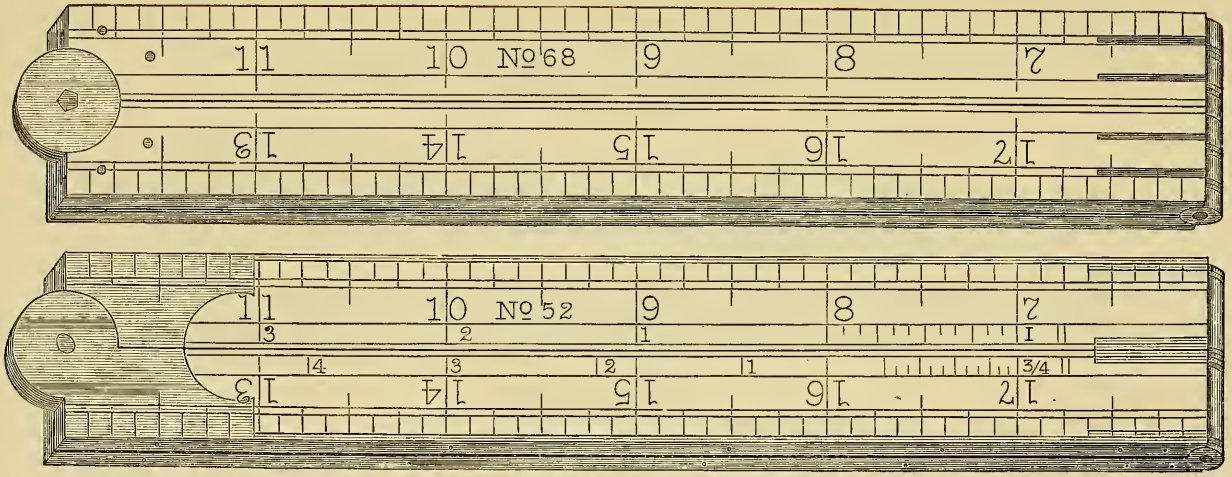


PER DOZ.

No. 55. Arch Joint, Middle Plates, 8ths and 16ths of in., ⅝ in. wide.... $4 00
56. " " Edge " " " " ⅝ " 6 00
57. " " Bound, " " " ⅝ " 12 00

STANLEY'S BOXWOOD RULES.

Two Feet, Four Fold, Narrow.

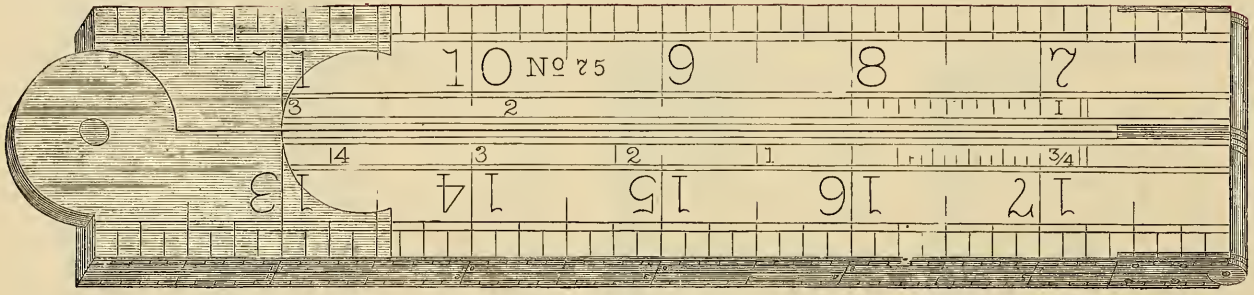


No. 68.	Round Joint, Middle Plates, 8ths and 16ths of in., 1 in. wide		$4 00	per dozen.
61.	Square " " " " " " 1 "		5 00	"
63.	" " Edge " 8ths, 10ths and 16ths of in., Drafting Scales, 1 in. wide		7 00	"
62.	" " Bound, " " " " " " 1 "		15 00	"
51.	Arch " Middle " " " " " " " 1 "		6 00	"
53.	" " Edge " " " " " " " 1 "		8 00	"
54.	" " Bound, " " " " " " 1 "		16 00	"
59.	Double Arch Joint, Bitted, " " " " " 1 "		9 00	"

Two Feet, Four Fold, Extra Narrow.

No. 61½.	Square Joint, Middle Plates, 8ths and 16ths of in., ¾ in. wide		$5 50	per dozen.
63½.	" " Edge " " 10ths and 16ths of in., ¾ in. wide		8 00	"
62½.	" " Bound, " " " " ¾ "		15 00	"

STANLEY'S BOXWOOD RULES.



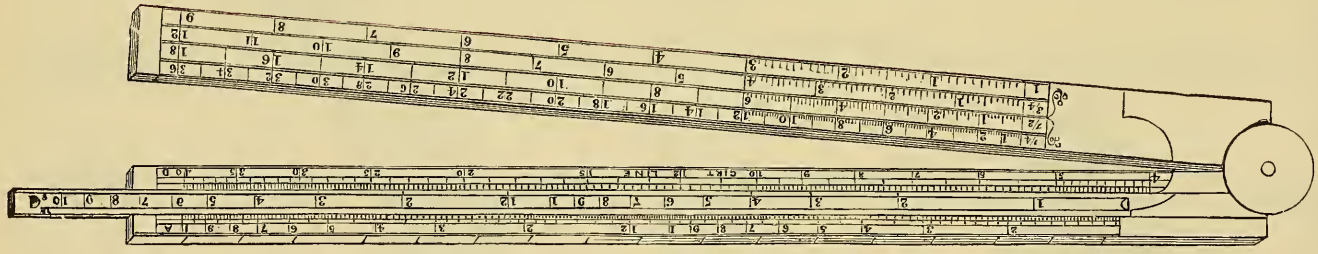
Two Feet, Four Fold, Broad.

No. 67.	Round Joint, Middle Plates, 8ths and 16ths of in., 1⅜ in. wide	$5 00	per dozen.
70.	Square " " " " " " Drafting Scales, 1⅜ in. wide	7 00	"
72.	" " Edge " " 10ths and 16ths of in., " " 1⅜ "	9 00	"
72½.	" " Bound, " " " " " " 1⅜ "	18 00	"
73.	Arch " Middle " " " " " " " 1⅜ "	9 00	"
75.	" " Edge " " " " " " " 1⅜ "	11 00	"
76.	" " Bound, " " " " " " " 1⅜ "	20 00	"
77.	Double Arch Joint, Bitted, " " " " " " 1⅜ "	12 00	"
78½.	" " " Bound, " " " " " " 1⅜ "	24 00	"
83.	Arch Joint, Edge Plates, Slide, 8ths, 10ths, 12ths and 16ths of in., 100ths of a foot, and Octagonal Scales, 1⅜ in. wide	14 00	"

Two Feet, Two Fold.

No. 1.	Arch Joint, 8ths and 16ths of in., Octagonal Scales, 1½ in. wide	$7 00	per dozen.
18.	Square " " " " 1½ "	5 00	"

GUNTER'S SLIDE AND ENGINEER'S RULES.



No. 12. Two Feet, Two Fold, Slide.

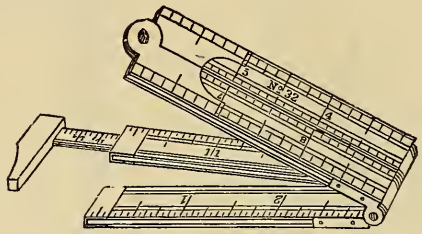
No. 6. Arch Joint, Bitted, Gunter's Slide, Engineering, 8ths, 10ths and 16ths of in., 100ths of a foot, Octagonal Scales, 1½ in. wide ..... $18 00 per dozen.

12. Arch Joint, Bitted, Gunter's Slide, 8ths, 10ths and 16ths of in., 100ths of a foot, Drafting and Octagonal Scales, 1½ in. wide ..... 14 00 "

15. Arch Joint, Bound, Gunter's Slide, 8ths, 10ths and 16ths of in., Drafting and Octagonal Scales, 1½ in. wide ..... 24 00 "

16. Arch Joint, Bound, Gunter's Slide, Engineering, 8ths, 10ths and 16ths of in., Octagonal Scales, 1½ in. wide ..... 28 00 "

BOXWOOD CALIPER RULES.



No. 32.

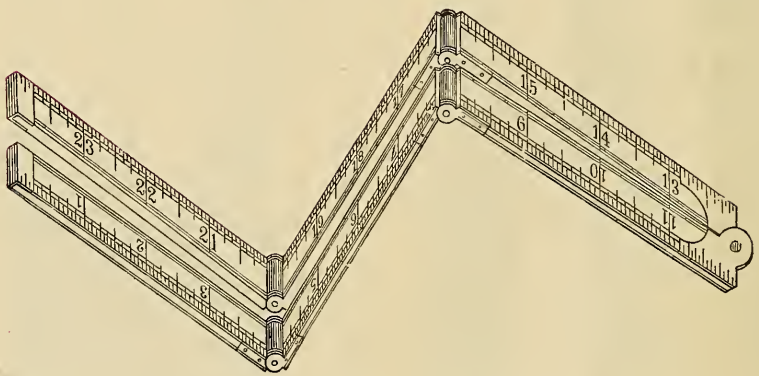
PER DOZ.

No 32. Arch Joint, Edge Plates, Four Fold, 12 in., 8ths, 10ths, 12ths and 16ths of in., 1 in. wide $12 00

32½. Arch Joint, Bound, Four Fold, 12 in., 8ths, 10ths, 12ths and 16ths of in., 1 in. wide 20 00

36. Square Joint, Two Fold, 6 in., 8ths, 10ths and 16ths of in., ⅞ in. wide 7 00

36½. Square Joint, Two Fold, 6 in., 8ths, 10ths, 12ths and 16ths of in., 1⅜ in. wide 12 00

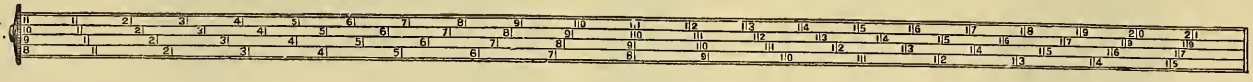


Two Feet, Six Fold Rules.

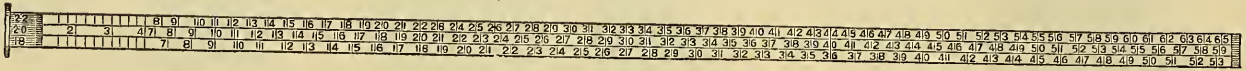
No. 58. Arch Joint, Edge Plates, 8ths and 16ths of in., ¾ in. wide $13 00

47.

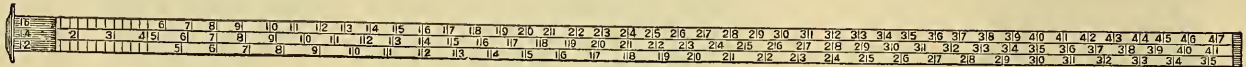
47½.



43½.



49.



48.

No. 43½. Board Stick, Flat, Hickory, Cast Brass Head and Tip, 6 lines, 12 to 22 feet, 3 feet..... $12 00 per dozen.

46. " " Octagon, Brass Cap, 8 to 23 feet, 2 feet..... 8 00 "

46½. " " Square, " " 8 " 23 " 2 " ..... 8 00 "

47. " " Octagon, " " 8 " 23 " 3 " ..... 12 00 "

47½. " " Square, " " 8 " 23 " 3 " ..... 12 00 "

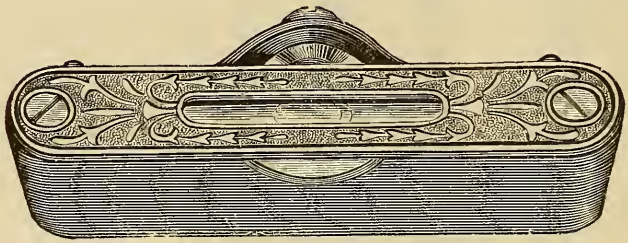
49. " " Flat, Hickory, Steel Head, Brazed, Extra Strong, 6 lines, 12 to 22 feet, 3 feet... 26 00 "

48. Walking Cane, Board Measure, Octagon, Hickory, Solid Cast Brass Head and Tip, 8 lines, 9 to 16 feet, 3 feet..... 12 00 "

NOTE.—Above numbers give the contents in Board Measure of 1 inch Boards.

DIRECTIONS.—Place the Stick across the flat surface of the Board, bringing the inside of the cap snugly to the edge of the same, then follow with the eye the column of figures in which the length of the Board is given as the first figure under the cap, and at the mark nearest the opposite edge of the Board will be found the contents of the Board in feet.

POCKET LEVELS.



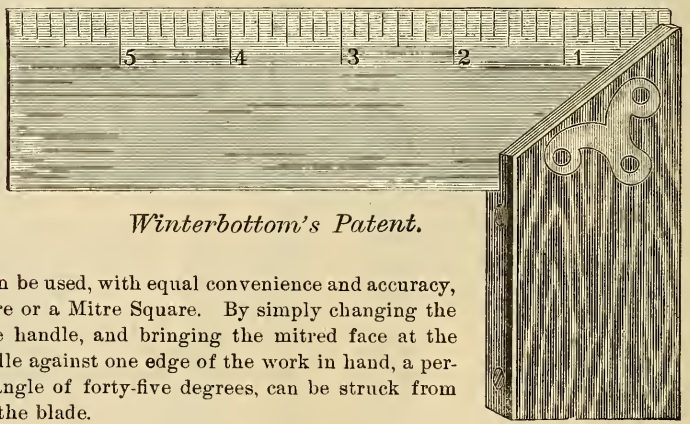
Improved Pattern.

			PER DOZ.
No. 40.	Cast Iron Top Plate, Japanned,	1 dozen in a box	$2 50
40½.	" " extra finish,	1 " " "	3 00
41.	Brass "	1 " " "	3 00
41½.	Cast Brass " extra thick,	1 " " "	3 50
42.	All Brass Pocket Level,	1 " " "	8 00

COMBINED

TRY AND MITRE SQUARE.

No. 2.



Winterbottom's Patent.

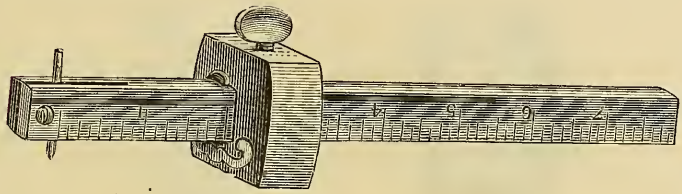
This tool can be used, with equal convenience and accuracy, as a Try Square or a Mitre Square. By simply changing the position of the handle, and bringing the mitred face at the top of the handle against one edge of the work in hand, a perfect mitre, or angle of forty-five degrees, can be struck from either edge of the blade.

No. 1. Iron Frame Handle, with Black Walnut Sides (inlaid), Graduated Steel Blades, per dozen, 4 in., $6 00; 6 in., $7 50; 8 in., $9 00.

No. 2. Rosewood Handle, with Steel Blades, per dozen, 4½ in., $4 00; 6 in., $5 00; 7½ in., $6 00.

½ Doz. in a Box.

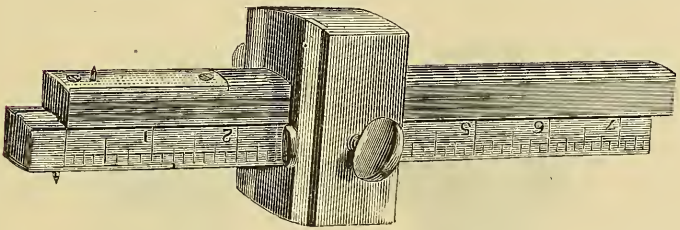
GAUGES.



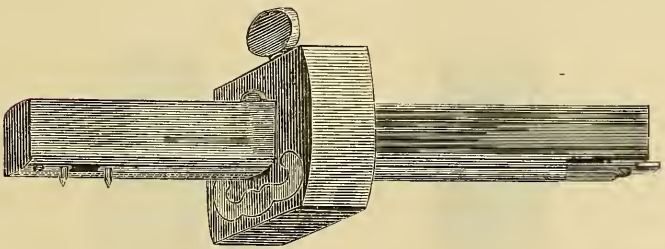
PER DOZ.

No. 62. Patent Marking Gauge, Beechwood, polished; Boxwood Thumb-screw, Oval Bar, marked, Adjusting Steel Point, 1 dozen in a box, $2 00

65. Patent Marking Gauge, Boxwood, polished; Plated Head, Brass Thumb-screw and Shoe, Oval Bar, marked, Adjusting Steel Point, ½ dozen in a box 5 00

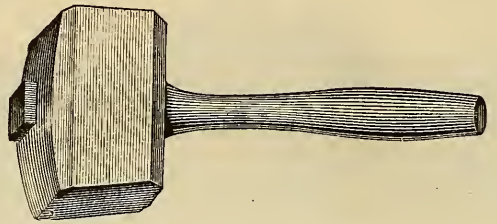


No. 71. Patent Double Gauge (Marking and Mortise Gauge combined), Beechwood, polished; Plated Head and Bars, Brass Thumb-Screws and Shoes, Oval Bars, marked, Steel Points, ½ dozen in a box 9 00



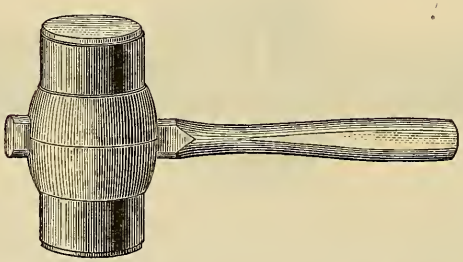
No. 73. Patent Mortise Gauge, Boxwood, polished; Plated Head, Brass Slide, Brass Thumb-Screw and Shoe, Oval Bar, marked, Steel Points, ½ dozen in a box 8 00

MALLETS.



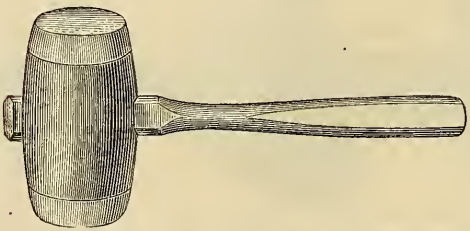
No. 1. Square, Mortised Handle.

Hickory	Mallet, 6 in. long,	2½ × 3½ in.		$2 50	per dozen.
"	" 6½ "	2¾ × 3¾		3 00	"
"	" 7 "	3 × 4		3 50	"
Lignum-vitæ	" 6 "	2½ × 3½		4 25	"
"	" 6½ "	2¾ × 3¾		5 25	"
"	" 7 "	3 × 4		6 25	"



No. 2. Round, Mortised Handle.

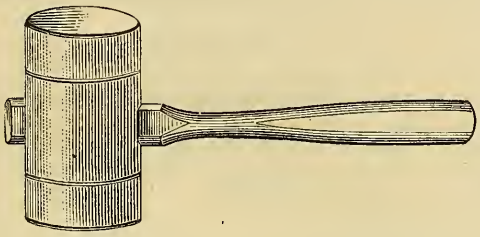
Round Mallet, Iron Ring,	5½ in. long,	3½ in. diameter	$4 50	per dozen.
" " "	6 "	4 "	7 00	"



No. 3. Iron Mallet.

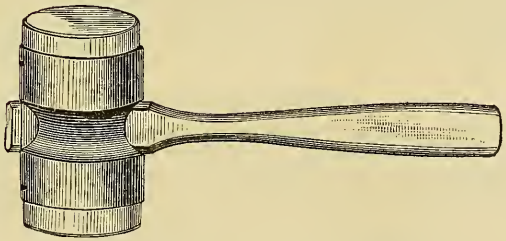
Round, Mortised, Hickory Ends,	2½ in. diameter	$5 00 per dozen.

MALLETS.



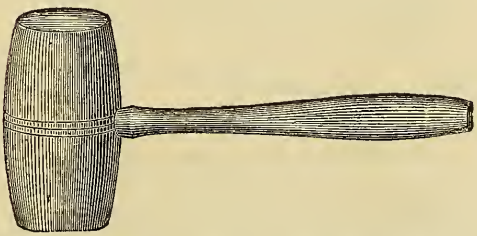
No. 4. Round, Mortised Handle.

Hickory	Mallet,	5 in.	long,	3 in.	diameter	$2 00	per dozen.
"	"	5½	"	3½	"	2 50	"
"	"	6	"	4	"	3 00	"
Lignum-vitæ	"	5	"	3	"	3 50	"
"	"	5½	"	3½	"	4 50	"
"	"	6	"	4	"	6 00	"



No. 5. Heavy Iron Socket.

Round Mallet, Mortised, Hickory Ends, 3 in. diameter ..... $9 00 per dozen.



No. 6. Round Tinner's Mallet.

Hickory, 5½ in. long, assorted, 2, 2¼ and 2½ in. diameter..... $2 00 per dozen.

STANDARD STEEL RULES.

BROWN & SHARPE MANUFACTURING COMPANY.

STANDARD LISTS.

1	2	3	4	6	9	12	18	24	36	48 in.
25c.	40	50	75	$1 00	1 50	2 00	3 00	4 00	8 00	12 00

The rules in this list are divided five ways in parts of inches, as follows:

No. 1 Graduations.	No. 2 Graduations.	No. 3 Graduations.	No. 4 Grad'ns.
1st cor. 10, 20, 50, 100	1st cor. 10, 20, 50, 100	1st cor. 16, 32, 64	1st cor. 64
2d " 12, 24, 48,	2d " 12, 24, 48,	2d " 16,	2d " 32
3d " 16, 32, 64,	3d " 16, 32, 64,	3d " 16,	3d " 16
4th " 14, 28,	4th " 8,	4th " 8,	4th " 8

No. 5 Graduations.	No. 6 Graduations.
1st cor. 16, 32, 64	1st cor. 32 whole length.
2d " 11, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25	2d " 48 "
3d " 26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38	3d " 50 "
4th " 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 100	4th " 64 "

12 in. Steel Rule of No. 5 Graduation $3 00
24 " " " " 5 " 6 00

Gear Rules.

No. 61. 12 in. Steel Rule divided to 18, 20, 22, 24, 26, 28, 30 and 32 parts of an inch, whole length $3 00

78. 12 in. Steel Rule divided to 6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36 and 38 parts of an inch. One inch of each division 3 00

The Rules of No. 5 Graduation can also be used for sizing gears.

Shrink Rules.

24 ¼ in. Steel Rule Shrink on one side and standard on the other. Divided on each side to 10, 20, 50, 100, 12, 24, 48, 16, 32 and 64 parts of an inch $4 50

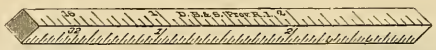
24 ¼ in. Steel Rule Shrink on both sides, No. 1 Graduation 4 50

24 ¼ in. Boxwood Rule Shrink on both sides, No. 1 Graduation 3 00

Standard Steel Yard Measures.

Divided on one side to inches and eighths, and on the other side to $\frac{1}{16}$, ⅛, ¼, ⅜, ½, ⅝, ¾ and ⅞ of a yard; 1 in. wide, ⅛ in. thick $3 00

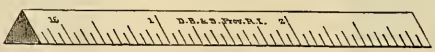
Square Steel Rules.



3 in., 50c. 4 in., 75c. 6 in., $1 00

Graduations, { 8, 16, 32, 64 to the inch, whole length.
16, 32, 64, 100 " " "
16, 64, 50, 100 " " "

Triangular Steel Rules.



3 in., 60c. 4 in., 80c. 6 in., $1 20 12 in., $3 00

Graduations, { 16, 64, 100 to the inch whole length.
16, 32, 64 " " "
20, 50, 100,—12, 24, 48,—16, 32, 64 to the inch.

The 12 in. are divided only as follows: 8, 10, 12, 14, 16, 20, 24, 28, 48, 50, 64, 100 to the inch.

STANDARD STEEL STRAIGHT EDGES.

BROWN & SHARPE MANUFACTURING CO.

STANDARD LIST.

Steel Straight Edges.

Of same width and thickness as Standard Rules.

6	in. long,	1	in. wide,	$\frac{1}{10}$	in. thick	$0 75
9	"	$1\frac{1}{8}$	"	$\frac{1}{10}$	"	1 12
12	"	$1\frac{1}{4}$	"	$\frac{1}{10}$	"	1 50
18	"	$1\frac{1}{2}$	"	$\frac{1}{8}$	"	2 25
24	"	2	"	$\frac{1}{8}$	"	3 00
36	"	$2\frac{3}{8}$	"	$\frac{1}{8}$	"	6 00
48	"	3	"	$\frac{1}{8}$	"	9 00

Beveled Steel Straight Edges.

12	in. long,	$1\frac{3}{8}$	in. wide,	$\frac{3}{16}$	in. thick	$2 50
18	"	$1\frac{3}{4}$	"	$\frac{3}{16}$	"	3 00
24	"	2	"	$\frac{3}{16}$	"	4 00
36	"	3	"	$\frac{1}{4}$	"	9 00
48	"	3	"	$\frac{1}{4}$	"	12 00

The beveled edges are $\frac{1}{16}$ in. thick. Only one edge is beveled.

Hardened Steel Straight Edges.

$5\frac{1}{2}$	in. long,	$1\frac{1}{8}$	in. wide,	$\frac{1}{12}$	in. thick	$1 00
7	"	$1\frac{1}{2}$	"	$\frac{1}{12}$	"	1 25
$10\frac{3}{4}$	"	$1\frac{5}{8}$	"	$\frac{1}{12}$	"	2 00
14	"	2	"	$\frac{1}{12}$	"	3 00
17	"	$2\frac{1}{4}$	"	$\frac{1}{12}$	"	3 50
20	"	$2\frac{3}{4}$	"	$\frac{1}{10}$	"	4 50
27	"	3	"	$\frac{1}{10}$	"	7 00
33	"	3	"	$\frac{1}{10}$	"	9 00
39	"	$3\frac{1}{2}$	"	$\frac{1}{8}$	"	12 00

These Straight Edges are the tongues of the Hardened Cast Steel Try Squares, and are hardened on the edges only.

Steel Straight Edges, for Draughtsmen.

15	in. long,	$1\frac{1}{4}$	in. wide,	$\frac{1}{20}$	in. thick	$1 14
18	"	$1\frac{1}{2}$	"	$\frac{1}{20}$	"	1 62
24	"	$1\frac{1}{2}$	"	$\frac{1}{18}$	"	2 16
30	"	$1\frac{3}{4}$	"	$\frac{1}{18}$	"	3 15
36	"	2	"	$\frac{1}{16}$	"	4 32
42	"	$2\frac{1}{4}$	"	$\frac{1}{16}$	"	5 67
48	"	$2\frac{1}{2}$	"	$\frac{1}{14}$	"	7 20
60	"	$2\frac{3}{4}$	"	$\frac{1}{12}$	"	9 00

Half Size.

CENTER GAUGE,

AND GAUGE FOR GRINDING AND SETTING SCREW TOOLS.

The angles used in this Gauge are 60 degrees. The four divisions upon the Gauge of 14, 20, 24 and 32 parts to the inch, are very useful in measuring the number of threads to the inch of taps and screws. The following parts to the inch can be determined by them, viz.: 2, 3, 4, 5, 6, 7, 8, 10, 12, 14, 16, 20, 24 and 32.

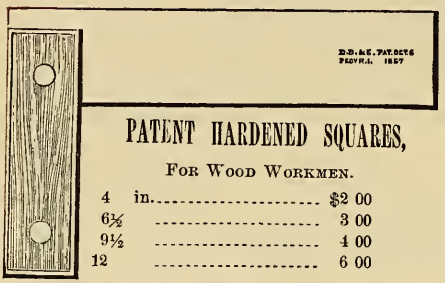
Price ..... 50 cents.

Also on hand, Center Gauges of the Whitworth or English Standard, 55 degrees.

STEEL SQUARES.

BROWN & SHARPE MANUFACTURING COMPANY.

STANDARD LISTS.

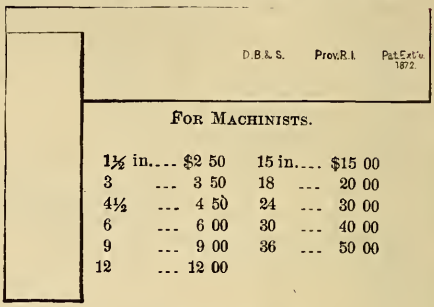


PATENT HARDENED SQUARES,

FOR WOOD WORKMEN.

4	in.	$2 00
6½		3 00
9½		4 00
12		6 00

PAT. HARDENED CAST STEEL TRY SQUARES,

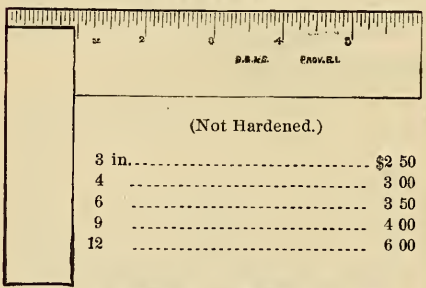


FOR MACHINISTS.

1½	in.	$2 50	15	in.	$15 00
3		3 50	18		20 00
4½		4 50	24		30 00
6		6 00	30		40 00
9		9 00	36		50 00
12		12 00			

GRADUATED STEEL SQUARES,

FOR MACHINISTS.

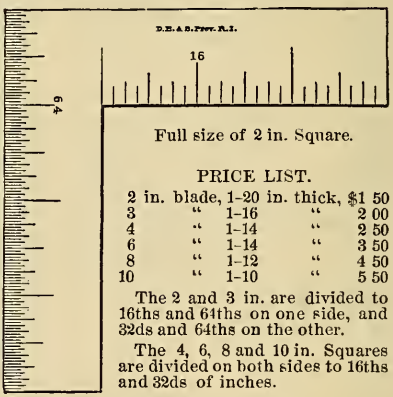


(Not Hardened.)

3	in.	$2 50
4		3 00
6		3 50
9		4 00
12		6 00

THIN STEEL SQUARES,

FOR MACHINISTS AND DRAUGHTSMEN.



Full size of 2 in. Square.

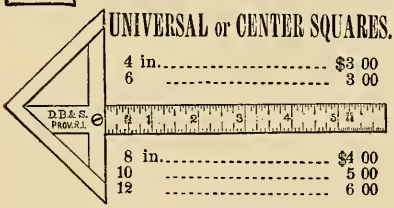
PRICE LIST.

2	in. blade,	1-20	in. thick,	$1 50
3	"	1-16	"	2 00
4	"	1-14	"	2 50
6	"	1-14	"	3 50
8	"	1-12	"	4 50
10	"	1-10	"	5 50

The 2 and 3 in. are divided to 16ths and 64ths on one side, and 32ds and 64ths on the other.

The 4, 6, 8 and 10 in. Squares are divided on both sides to 16ths and 32ds of inches.

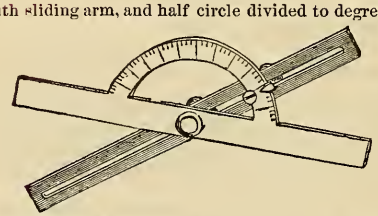
UNIVERSAL or CENTER SQUARES.



4	in.	$3 00
6		3 00
8	in.	$4 00
10		5 00
12		6 00

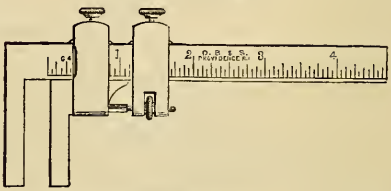
BEVEL PROTRACTOR,

With sliding arm, and half circle divided to degrees.



Price, with	6	in. sliding arm		$6 50
" "	10	" "		7 00

CALIPER SQUARES.



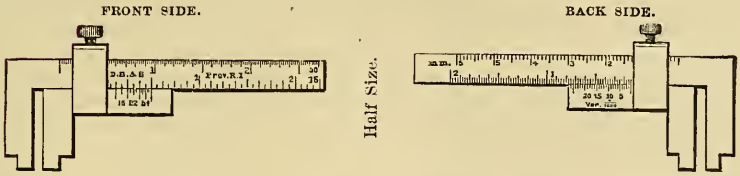
2	in. without adjusting screw	$3 50
4	" " "	4 50
2	with adjusting screw, like cut	4 25
4	" " " " "	5 50

VERNIER CALIPERS.

BROWN & SHARPE MANUFACTURING CO.

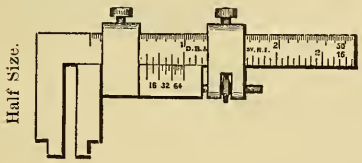
STANDARD LISTS.

Hardened Cast Steel Pocket Vernier Caliper.



Price..... $5 00 In Morocco Case..... $6 00

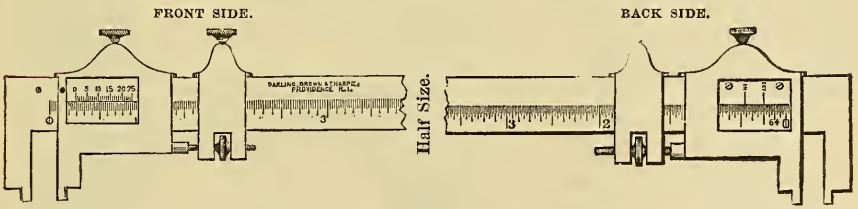
The above cuts are *fac similes* of the front and back sides of the Pocket Vernier Caliper. The jaws are hardened and ground. The front side is divided on the lower edge to inches and sixteenths, but arranged to read by means of an indicating scale to thirty-seconds and sixty-fourths, and the upper edge to fiftieths of inches, reading from the left hand edge of sliding head. On the back side, the lower edge is divided to fortieths of inches, but arranged to read by means of a Vernier on the sliding head, to thousandths of inches, and the upper edge to millimetres. French measure, reading from the right hand edge of sliding head, and figured to centimetres.



The same instrument with Adjusting Screw, as shown in above cut.

Price..... $6 00 In Morocco Case... 7 00

Improved Vernier Caliper.



The above cuts are *fac similes* of front and back of the Vernier Caliper, the front side of which is divided into thousandths of inches. On the back side are sixty-fourths of inches, to read without a Vernier. Instead of sixty-fourths of inches some are divided with Vernier, reading to twentieths of millimetres, French measure. This instrument is furnished with both inside and outside Calipers, and points to transfer the distance with dividers. An explanation of the Vernier accompanies each instrument. These instruments are made of steel, and have the points tempered and jaws ground.

A standard for testing the accurate adjustment of the Caliper is made, price, $3 00.

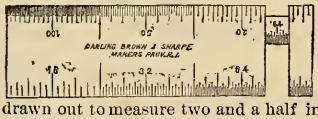
Price, in Morocco Case..... 6 in., $25 00. 12 in., $30 00.

RULES AND GAUGES.

BROWN & SHARPE MANUFACTURING CO.

STANDARD LISTS.

Steel Caliper Rules.



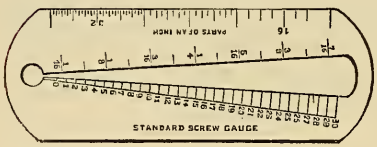
This cut is a *fac simile* of one side of these Rules. The other side is divided to 12ths, 24ths, 48ths, 8ths, 14ths and 28ths, on the outside, and upon the slide to 32ds and 64ths of inches. When closed they are three inches long. The Caliper can be drawn out to measure two and a half inches. The thickness of the Rule is one-eighth of an inch.

These Rules are divided in four ways: A, divided on outside like cut; on slide to 32ds and 64ths. B, divided on outside like cut; on slide 64ths and 100ths. C, divided on outside to 8ths, 16ths, 32ds and 64ths; on slide to 32ds and 64ths. D, divided on outside to 8ths, 16ths, 32ds and 64ths ; on slide to 64ths and 100ths. Others are divided for BUTTON GAUGES, on outside to 16ths, 20ths, 32ds and 40ths, and on slide to 40ths and 80ths of inches.

Price $4 00

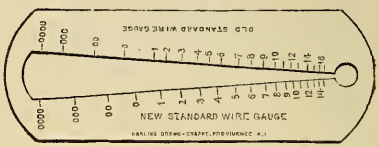
Pocket Screw and Wire Gauge.

FRONT SIDE.



Half Size.

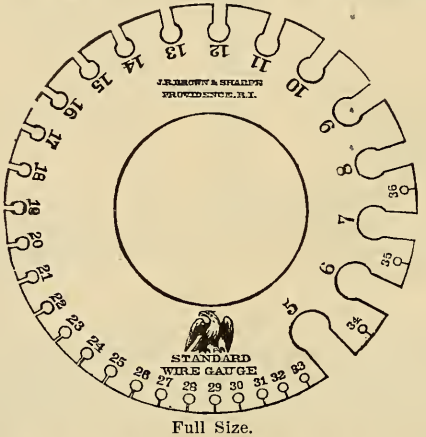
BACK SIDE.



Price ..... $2 50 each.

The American Standard Wire Gauge.

Adopted by the Brass Manufacturers, Jan., 1858.



Full Size.

These Gauges are made from the best steel, and are tempered, adjusted and warranted accurate.

☞ None genuine unless stamped as in the engraving with our trade marks.

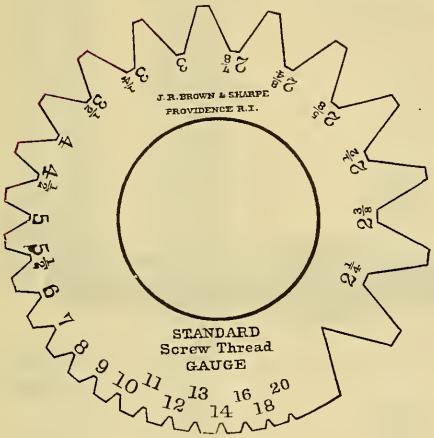
Prices, Round Gauges, ... Sizes, 0 to 36 ..... $6 00
" " ..... " 5 " 36 ..... 4 00

STANDARD GAUGES.

BROWN & SHARPE MANUFACTURING CO.

STANDARD LISTS.

Standard Screw Thread Gauge.



Full Size.

This Gauge is intended to be used as a standard for grinding tools to cut threads according to the new system recommended for adoption by the Franklin Institute of Philadelphia.

The angles are 60 degrees, and the flat surfaces at top and bottom of threads are equal to one-eighth of the pitch.

Tables for screw threads, bolts and nuts, are furnished with the Gauge.

Price $6 00

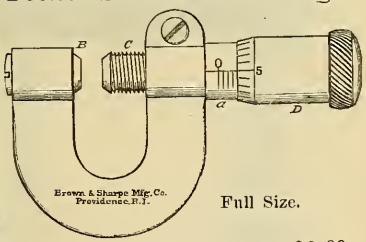
Screw Pitch Gauge.

FOR 16 PITCHES.

Full Size.

Price $1 50

Pocket Sheet Metal Gauge.

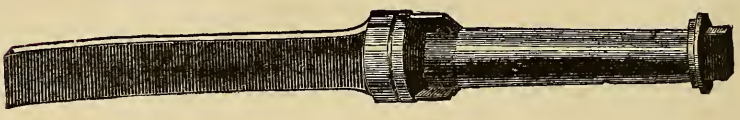


Full Size.

Price $6 00
In Morocco Case 6 50

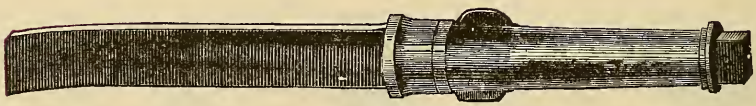
These Gauges will measure the thickness of sheet metal or other material, by thousandths of an inch up to three-tenths of an inch at any point within half an inch of the edge, and can be applied as easily as the common Gauge. It will also answer to measure the diameter of wire. Means of adjustment are provided in case of wear by continued use.

AXLES.



Half Patent.

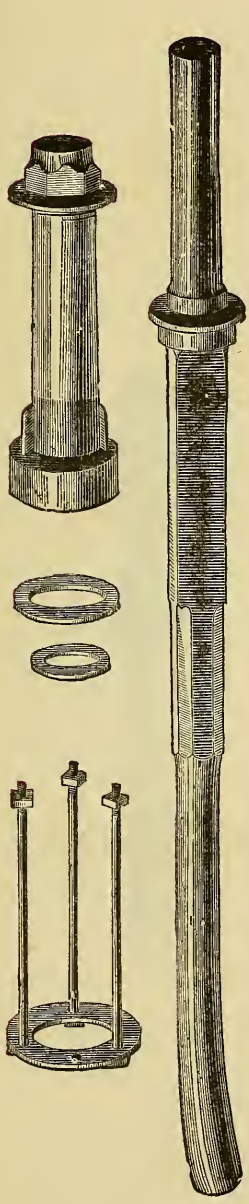
New Half Patent.



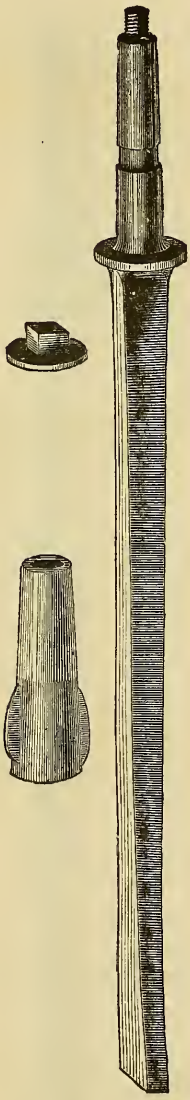
Swell Taper.

Common Half Patent Short Bed.

AXLES.



Mail Patent Axle, Coach Shape Bed.



Concord Axle.

Front Axle has Fon Tail—Hind Axle, Straight Bed.

Pipe Box.

Common Iron Axle.

AXLES.

Patent Lubricating Half Patent Long Bed.

Patent Lubricating Coach Bed.

Lubricating Half Patent Short Bed.

REINDEER AXLES.

PRICE LIST.

Subject to Change without Notice.

Best Quality Extra Refined Iron Solid Collar Axles.

No.	LONG BEDS.	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝	1¾
1	Swelled Collar, Half Patent	$6.00	$6.00	$6.00	$6.90	$8.50	$11.50	$14.25	$17.75	$20.25
2	Swelled Taper	6.00	6.00	6.00	6.90	8.50	11.50	14.25	17.75	20.25
3	Collings' Collar	7.50	7.50	7.50	7.75	9.75	12.50	15.50	18.75	21.25
	SHORT BEDS.									
4	Swelled Collar, Half Patent	4.75	4.75	4.75	5.50	6.50	8.50	10.75	13.50	16.50
5	Swelled Taper	4.75	4.75	4.75	5.50	6.50	8.50	10.75	13.50	16.50
6	Collings' Collar	5.50	5.50	5.50	6.50	7.50	9.50	11.75	14.75	17.50

The above prices, for Nos. 1 to 6 inclusive, are for Axles not Case-Hardened; if ordered Case-Hardened, the price will be 50 cents per set net extra for 1⅜ and smaller, 1½ and larger, $1.00 per set. Extra for Coach Beds to 1⅜, 25 cents; 1½ and larger, 50 cents per set. These Axles are made of an extra quality of iron, and finished in good shape; Boxes turned. Solid End Nuts, faced, arms polished, and beds nicely drawn.

Best Iron Axles, Solid Collar, Steel Converted, Solid End Nuts, Extra Finish.

No.	LONG BEDS.	⅝ to ⅞	1	1⅛	1¼	1⅜	1½	1⅝
7	Swelled Solid Collar, Half Patent	$8.75	$9 25	$10.75	$13.50	$16.50	$19.25	$26.00
8	Swelled Taper Solid Collar	8.75	9.25	10.75	13.50	16.00	19.00	26.00
9	Mail Patent " Coach Beds	10.75	10.75	13.75	16.50	19.50	22.00	26.50
10	Collings' Collar	9.50	9.75	11.25	14.50	17.00	21.50	27.00
	SHORT BEDS.							
11	Swelled Collar, Half Patent	6 75	6.75	8.00	10.00	12.75	16.50	20.00
12	Swelled Taper	6 75	6.75	8.00	10.00	12.75	16.50	20.00
13	Mail Patent	9.50	9.75	11.00	12.75	15.75	17.50	21.50
14	Collings' Patent	7.75	7.75	8.75	11.50	13.75	18.00	21.50

The prices given for above, from No. 7 to No. 14 inclusive, are Steel Converted Solid End Nuts, taper or fan beds. In offering these Axles, we are confident in stating that they are equal in quality, finish, shape, and in every detail, to any Axle made in this country. Not any extras to above Nos. (7 to 14) except for Coach Beds, ⅝ to 1¼ 50 cents ⅜ and larger, $1.00 per set. We fully warrant these Axles. If not Steel Converted, $1.00 per set less.

Finest Quality Steel Axles, Solid Nuts.

No.	LONG BEDS.	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝
15	Swelled Collar, Half Patent	$11.50	$11.50	$12.00	$13.00	$16.00	$20.00	$24.00	$26.00	------
16	Swelled Taper	11.50	11.50	12.00	13.00	16.00	20.00	24.00	26.00	------
17	Mail Patent, Coach Beds	14.50	14.50	14.50	16.50	19.00	23.00	26.00	31.00	------
18	Collings' Collar	12.50	12.50	13.00	14.00	16.00	19.00	24.00	27.00	------
	SHORT BEDS.									
19	Swelled Collar, Half Patent	9.00	9.25	9.50	10.00	12.00	15.00	19.00	20.00	------
20	Swelled Taper	9.00	9.25	9.50	10.00	12.00	15.00	19.00	20.00	------
21	Mail Patent, Solid Collar	11.50	12.00	12.50	13.00	15.00	16.50	20.00	24.50	------
22	Collings' Collar	10.00	10.00	11.00	11.00	13.00	18.75	19.75	22.00	------

N. B.—All our Steel Axles have a light Box, especially adapted to Small Hubs or Patent Wheels.

Add to above list for Patent Wrought Case-hardened Boxes, Composition Boxes and Malleable Iron Boxes, as per list for Extra Quality Boxes.

ANCHOR AXLES.

PRICE LIST.

Subject to Change without Notice.

No.	Best Selected Iron, Manufactured Expressly for these Axles.	¾ to 1	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞ and 2 made to order.
1	Swelled Taper Axles, Short Beds	$4 50	$5 35	$6 50	$8 50	$10 75	$13 50	$16 50	
2	Swelled Taper Axles, Long Beds	6 00	6 80	8 50	11 50	14 25	17 75	20 25	
3	Half Patent Axles, Short Beds	4 50	5 35	6 50	8 50	10 75	13 50	16 50	
3½	New Half Patent Axles, Short Beds	4 75	5 60	6 75	8 75	11 00	13 75	16 75	
4	Half Patent Axles, Long Beds	6 00	6 80	8 50	11 50	14 25	17 75	20 25	
4½	New Half Patent Axles, Long Beds	6 25	7 00	8 75	11 75	14 50	18 00	20 50	

Extra to List for Hardening all of the above, 50 cents per set; 1¾ and larger, $1.00. Extra for Fan Tail and Coach shapes, to 1¼, 25 cents net; 1⅜ and larger, 50 cents net per set, with solid End Nuts.

Collings' Collar Axles, over Swelled Taper, per set to List,	Sizes,	1⅛ and smaller.	1¼ to 1⅜.	1½ to 1⅝.
	Prices,	$1 00	$1 25	$1 75

Nos. 3½ and 4½ are very desirable for the Sarvens and other Patent Wheels, on account of the Boxes being smaller at large end.

No.	Best Iron Axles, Steel Converted.	⅝ to ⅞	1	1⅛	1¼	1⅜	1½	1⅝
5	Swelled Taper Axles, Short Beds	$6 75	$7 00	$8 00	$10 00	$12 75	$16 50	$20 00
6	Swelled Taper Axles, Long Beds	8 75	9 25	10 75	13 50	16 50	19 50	25 00
7	Half Patent Axles, Short Beds	6 75	7 00	8 00	10 00	12 75	16 50	20 00
7½	New Half Patent Axles, Short Beds	7 00	7 25	8 25	10 25	13 00	16 75	20 25
8	Half Patent Axles, Long Beds	8 75	9 25	10 75	13 50	16 50	19 50	25 00
8½	New Half Patent Axles, Long Beds	9 00	9 50	11 00	13 75	16 75	19 75	25 25

No extra charge for Fan Tail Shapes. Extra for Coach shapes, to 1¼, 25 cents net per set; 1⅜ and larger, 50 cents net per set, with solid End Nuts.

No.	Iron Mail Patent Axles, Steel Converted.	¾ to 1	1⅛	1¼	1⅜	1½	1⅝
9	Mail Patent, Short Bed	$9 50	$11 00	$13 00	$16 00	$18 00	$22 00
10	Mail Patent, Coach Shape, Long Bed	11 00	14 00	17 00	20 00	22 00	27 00

	Sizes,	⅞ to 1.	1⅛ to 1¼.	1⅜ and larger.
Extra for Malleable Oil Cup Nuts, on Mail Patent Axles,	Prices,	$2 00	$2 50	$3 50
" Brass " " " "		2 75	4 00	5 00

No.	Best Bessemer Steel Axles.	⅞ & ¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝
11	Swelled Taper Axles, Short Beds	$9 25	$9 50	$10 00	$12 00	$15 00	$19 00	$22 00	$27 00
12	Swelled Taper Axles, Long Beds	11 50	12 00	13 00	16 00	20 00	24 00	26 00	33 00
13	Half Patent Axles, Short Beds	9 25	9 50	10 00	12 00	15 00	19 00	22 00	27 00
13½	New Half Patent Axles, Short Beds	9 50	9 75	10 25	12 25	15 25	19 25	22 25	27 25
14	Half Patent Axles, Long Beds	11 50	12 00	13 00	16 00	20 00	24 00	26 00	33 00
14½	New Half Patent Axles, Long Beds	11 75	12 25	13 25	16 25	20 25	24 25	26 25	33 25
16	Mail Patent Axles, Short Beds	12 00	12 00	13 00	15 00	17 00	21 00	25 00	33 00
17	Mail Patent Axles, Long Coach Beds	14 50	14 50	16 50	19 00	23 00	26 00	31 00	38 00

N. B.—To weld Steel Axles, have a clean fire; scalf nicely; use freely of borax; sprinkle on a little iron filings, while heating, which heat should be a light cherry red, and they will adhere nicely.

No extra charge for Fan Tail shapes. Extra for Coach shapes, to 1¼, 50 cents; 1⅜ and larger, $1.00 per set net. Extra for Capping Nuts (all Nos.) 50 cents net per set, with solid End Nuts.

Collings' Collar Axles, over Swelled Taper, per set to List.	Sizes,	1⅛ and smaller.	1¼ to 1⅜.	1½ to 1⅝.
	Prices,	$1 00	$1 25	$1 75

Nos. 7½, 8½, 13½ and 14½ are very desirable for the Sarvens and other Patent Wheels.

Steel Sulky Axle same List as No. 13.

Add to above list for Patent Wrought Case-hardened Boxes, Composition Boxes and Malleable Iron Boxes, as per list for Extra Quality Boxes.

BIRMINGHAM AXLES.

PRICE LIST.

Short Bed — Loose Collar.

No.		¾, ⅞ & 1	1 1-16 & 1 1 8	1¼	1⅜	1½	1⅝	1¾	2	2¼
1	Common	$2 75	$3 35	$4 20	$5 00	$6 20	$8 00	$10 00	$12 00	$16 00
2	Taper, with Leather Washers	2 90	3 55	4 40	5 35	6 60	8 50	10 75	13 00	17 00
4	Half Patent " "	3 15	3 75	4 60	5 70	7 00	9 00	11 50	14 00	18 00

Common — Solid Collar.

No.	LONG BED.	¾, ⅞ & 1	1 1-16 & 1 1-8	1¼	1⅜	1½	1⅝	1¾	2	2¼
2½	Plain Tap'r, with Leather Washers	$4 50	$5 25	$6 50	$8 00	$10 00	$12 50	$14 75	$19 75	$26 50
4½	" Half Patent " "	4 70	5 50	6 75	8 25	10 25	12 75	15 00	20 00	27 00
	SHORT BED.									
2½	Plain Tap'r, with Leather Washers	3 15	3 75	4 60	5 70	7 00	9 00	11 50	14 00	18 00
4½	" Half Patent " "	3 35	4 00	4 85	6 00	7 25	9 25	11 75	14 25	18 50

DERBY AXLE.

PRICE LIST.

HAMMERED FROM THE BEST SELECTED SCRAP IRON, BOXES TURNED AND WELL FITTED.

No.	LONG BED.	¾, ⅞ & 1	1 1-16 & 1 1-8	1¼	1⅜	1½	1⅝	1¾	2	2¼
3 5	Swelled Taper, Solid Collar / Half Patent, " "	$5 00	$6 00	$7 25	$8 75	$11 00	$13 25	$16 25	$22 50	$30 00
	SHORT BED.									
3 5	Swelled Taper, Solid Collar / Half Patent, " "	3 75	4 50	5 25	6 50	8 00	10 00	12 50	18 00	24 00

Patent Double Solid Collar, Warranted Oil and Dirt Tight.

No.	LONG BED.	¾, ⅞ & 1	1 1-16 & 1 1-8	1¼	1⅜	1½	1⅝	1¾	2	2¼
8	Half Patent	$6 00	$7 00	$8 25	$9 75	$12 00	$14 50	$18 00	$25 00	$33 00
	SHORT BED.									
8	Half Patent	4 50	5 25	6 25	7 50	9 00	11 25	14 25	20 50	27 00

Add to list for Case-Hardening, 50 cents per set. Add to list for Fan-Tail and Coach Shape Beds, ¾ to 1¼ in., 25 cents per set; 1¼ in. and larger, 50 cents per set.

Nos. 5 and 8 Half Patent Axles have Boxes suitable for light Hubs.

For a medium price Axle there is none better than the Derby.

JONES AND HENRY AXLES.

PRICE LIST.

No.	Best Refined Iron Axles.	⅞ to 1	1⅛	1¼	1⅜	1½
1	Short Beds Solid Collar, Plain Half Patent	$3 67	$4 67	$5 67	$8 00	$10 67
2	Long " " " " " "	5 00	6 00	7 33	10 00	13 33
3	Short " " " " Taper	3 67	4 67	5 67	8 00	10 67
4	Long " " " " "	5 00	6 00	7 33	10 00	13 33
5	Short " " " Swell "	3 67	4 67	5 67	8 00	10 67
6	Long " " " " "	5 00	6 00	7 33	10 00	13 33
7	Short " " " " Half Patent	3 67	4 67	5 67	8 00	10 67
8	Long " " " " " "	5 00	6 00	7 33	10 00	13 33

No.	Superior Quality and Finish.	⅞ to 1	1⅛	1¼	1⅜	1½
9	Short Beds, Solid Collar, Plain Taper	$6 00	$7 00	$8 50	$10 00	$12 50
10	Long " " " " "	7 50	8 50	10 50	13 00	16 00
11	Short " " " Swell "	6 00	7 00	8 50	10 00	12 50
12	Long " " " " "	7 50	8 50	10 50	13 00	16 00
13	Short " " " " Half Patent	6 00	7 00	8 50	10 00	12 50
14	Long " " " " " "	7 50	8 50	10 50	13 00	16 00

No.	Steel Axles.	⅝ & ⅞	1	1⅛	1¼	1⅜
15	Short Beds, Swell Taper	$8 00	$9 00	$10 00	$12 00	$14 00
16	Long " " "	10 00	11 00	12 00	14 50	18 00
17	Short " Plain Half Patent	8 00	9 00	10 00	12 00	14 00
18	Long " " " "	10 00	11 00	12 00	14 50	18 00
19	Short " Swell " "	8 00	9 00	10 00	12 00	14 00
20	Long " " " "	10 00	11 00	12 00	14 50	18 00

No.	Mail Patent Axles—Best Iron and Finish.	1	1⅛	1¼	1⅜	1½	1⅝	1¾
21	Short Beds, Mail Patent	$8 50	$9 50	$11 00	$13 00	$16 00	$19 00	$22 00
22	Long " " "	10 00	12 00	14 50	16 50	20 00	24 00	28 00

No.	Mail Patent—Refined Iron.	1	1⅛	1¼	1⅜	1½	1⅝	1¾
23	Short Beds, Mail Patent	$6 50	$7 50	$9 00	$10 50	$13 00	$16 00	$19 00
24	Long " " "	8 00	10 00	12 00	14 50	16 50	19 00	23 00

	Composition Boxes.	⅝ & ⅞	1	1⅛	1¼	1⅜
	Extra per Set over others	$2 00	$2 50	$3 00	$4 00	$5 00

Case-Hardening, extra per set ..... 50 cents.
Solid End Nuts, " " ..... 25 "
Coach Beds, " " ..... 25 "
" " 1⅜ and larger, per set ..... 50 "

No extra charge for Fan-Tail Shapes.

PATENT LUBRICATING AXLE.

This invention proves to be the best yet introduced to prevent the difficulties arising from the heating of Axles.

With this improvement, a vehicle may be run three or four times as long with one greasing as it can with any other Axle.

Although introduced within the past year, several thousand sets are now in use, daily increasing their popularity. Particular care and attention is given to the workmanship and to the selection of iron used in all these Axles, whether Lubricating or otherwise.

KIMBARK AXLES.

PRICE LIST.

MADE FOR US FROM BEST SELECTED SCRAP IRON.

HAMMERED IRON AXLES.

No.	Swelled Taper, Solid Collar.	¾ to 1	1⅛	1¼	1⅜	1½	1⅝	1¾
1	Short Beds	$4 75	$5 75	$7 00	$9 25	$11 75	$14 75	$18 00
2	Long "	6 50	7 50	9 20	11 50	14 50	17 75	20 50
	Half Patent Solid Collar.							
3	Short Beds	4 75	5 75	7 00	9 25	11 75	14 75	18 00
4	Long "	6 50	7 50	9 00	11 50	14 50	17 75	20 50

STEEL CONVERTED AXLES.

No.	Swelled Taper, Solid Collar.	¾ to 1	1⅛	1¼	1⅜	1½	1⅝
5	Short Beds	$6 25	$6 75	$8 50	$10 80	$14 00	$17 25
6	Long "	8 00	9 25	11 50	14 25	16 75	21 50
	Half Patent Solid Collar.						
7	Short Beds	6 25	6 75	8 50	10 80	14 00	17 25
8	Long "	8 00	9 25	11 50	14 25	16 75	21 50

MAIL PATENT AXLES.

No.	Mail Patent.	1⅛	1¼	1⅜	1½	1⅝
9	Solid Collar, Short Beds	$11 75	$14 00	$17 50	$19 50	$23 75
10	Coach Shape, Long "	15 25	18 50	21 50	23 75	29 00

LA BELLE AXLES.

EXTRA REFINED IRON.

No.	Taper, Solid Collar.	¾ to 1	1⅛	1¼	1⅜	1½	1⅝	1¾	2
4	Swelled Shoulder, Long Beds	$5 25	$6 25	$7 75	$9 75	$11 75	$14 50	$18 50	$25 00
5	" " Short "	4 75	5 75	6 75	8 00	9 50	11 75	15 00	20 25
	Half Patent, Solid Collar.								
6	Swelled Shoulder, Long Beds	5 25	6 25	7 75	9 75	11 75	14 50	18 50	25 00
7	" " Short "	4 75	5 75	6 75	8 00	9 50	11 75	15 00	20 25

EMPIRE AXLES.

DOUBLE REFINED IRON.

No.	Swelled Taper, Solid Collar.	¾ to 1	1⅛	1¼	1⅜	1½	1⅝	1¾	2	2¼
3	Short Beds	$4 25	$5 00	$6 50	$8 25	$10 50	$12 75	$16 25	$21 00	$27 00
3½	" "	4 25	5 00	6 50	8 25	10 50	12 75	16 25	21 00	27 00
3	Long "	6 00	6 75	8 25	11 00	13 50	17 25	21 00	27 75	35 25
3½	" "	6 00	6 75	8 25	11 00	13 50	17 25	21 00	27 75	35 25
	Half Patent Solid Collar.									
4	Short Beds	4 35	5 10	6 50	8 25	10 50	12 75	16 25	21 00	27 00
4½	" "	4 35	5 10	6 50	8 25	10 50	12 75	16 25	21 00	27 00
4	Long "	6 00	6 75	8 25	11 00	13 50	17 25	21 00	27 75	35 25
4½	" "	6 00	6 75	8 25	11 00	13 50	17 25	21 00	27 75	35 25

Extra to list for Case-Hardening, 50 cents per set, net. 1⅜ and larger, $1 00.

Extra for Coach Shapes, 25 cents per set, net. 1⅝ and larger, 50 cents. No charge for Fan-Tailing.

No. 4½ is especially adapted to Sarven and other Patent Wheels. No. 3½, the Nib is on the shoulder of Box.

GENUINE CONCORD AXLES.

PRICE LIST.

MADE OF THE BEST EXTRA REFINED IRON.

Size of Beds	1⅛	1¼	1⅜	1½	1⅝	1¾	2	in.
Length of Arms	6, 6½, 7	6½, 7, 7½	7, 7½, 8	7, 7½, 8, 8½	8, 8½, 9	9, 9½, 10	10, 10½	in.
Price per Set	$7 50	8 50	10 25	12 75	15 25	17 75	23 00	

All sizes larger than 2 in. can be furnished at short notice, from the manufacturers.

COMMON IRON AXLES.

PRICE LIST.

All sizes, from 1⅛ up to 3 in. Bed	7 cents per pound.
One Inch Bed and under	extra 1 " " "
Common Pipe Boxes	10 " " "

EXTRA QUALITY BOXES.

PRICE LIST.

PATENT WROUGHT IRON, CASE-HARDENED BOXES.

SIZES,	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝
Extra per Set, over ordinary Boxes for Taper and Half Patent	$2 00	2 00	2 00	2 50	3 00	3 75	4 75	6 00	
Extra per Set, over ordinary Boxes, for Taper and Mail Patent and Oil Cup Nuts	....	....	2 25	2 75	3 75	4 00	5 25	6 50	7 75

COMPOSITION BOXES.

SIZES,	⅝	¾	⅞	1	1⅛	1¼
Extra per Set, over ordinary Boxes	$2 00	2 00	2 00	2 50	3 00	4 00

MALLEABLE IRON BOXES.

SIZES,	⅝	¾	⅞	1	1⅛	1¼	1⅜
Per Set extra to List	$1 00	1 00	1 00	1 25	1 25	1 40	1 60

LEATHER
AXLE WASHERS AND COLLARS.

MACHINE PRESSED.

Put up in Boxes of ½ Gross each, (Collar and Nut separate.)

SIZES,	¾	⅞	1	1⅛	1¼	1⅜	1½
Box of each, Collar and Nut Washers, containing 18 full Sets	$3 78	3 78	4 32	5 40	6 30	7 20	8 10

RETAIL PRICE LIST.—(FOUR COLLARS—FOUR NUTS.)

Sizes	¾	⅞	1	1⅛	1¼	1⅜	1½
Price	21c.	21c.	24c.	30c.	35c.	40c.	45c.

LIST OF SIZES AND APPROXIMATE WEIGHTS

OF

COMMON IRON AXLES.

SIZE OF BED.	LENGTH OF ARM.	AVERAGE WEIGHT PER SET.
1 in.	6 in.	41 pounds.
1	6½	43 "
1	7	45 "
1⅛	6.	54 "
1⅛	6½	56 "
1⅛	7	58 "
1¼	6	65 "
1¼	6½	68 "
1¼	7	71 "
1¼	7½	75 "
1⅜	6	80 "
1⅜	6½	82 "
1⅜	7	84 "
1⅜	7½	86 "
1⅜	8	87 "
1½	7	96 "
1½	7½	98 "
1½	8	101 "
1½	8½	103 "
1½	9	105 "
1⅝	8	118 "
1⅝	8½	121 "
1⅝	9	124 "
1¾	8½	141 "
1¾	9	144 "
1¾	9½	148 "
1¾	10	150 "
1¾	10½	153 "
2	9	192 "
2	9½	196 "
2	10	200 "
2	10½	205 "
2¼	10	246 "
2¼	10½	250 "
2¼	11	254 "
2½	10½	295 "
2½	11	301 "
2½	12	330 "
2¾	12	375 "
3	12	460 "

Above weights must not be considered the exact weights per set, but given as an aid in making estimates on work.

LIST OF SIZES AND APPROXIMATE WEIGHTS

OF

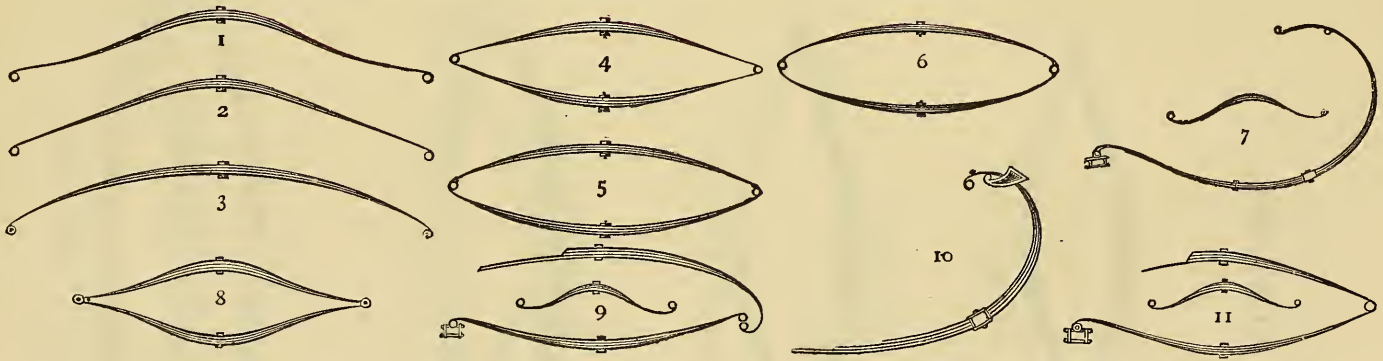
CONCORD OR EXPRESS WAGON AXLES.

SIZE OF BED.	LENGTH OF ARM.	AVERAGE WEIGHT PER SET.
1⅛ in.	6 in.	44 pounds.
1⅛	6½	47 "
1⅛	7	49 "
1¼	6½	56 "
1¼	7	57½ "
1¼	7½	59 "
1⅜	6½	66 "
1⅜	7	70 "
1⅜	7½	73 "
1⅜	8	76 "
1½	7	81 "
1½	7½	84 "
1½	8	88 "
1½	8½	90 "
1½	9	93 "
1⅝	8	101 "
1⅝	8½	104 "
1⅝	9	106 "
1¾	8½	118 "
1¾	9	122 "
1¾	9½	125 "
1¾	10	128 "
2	9	151 "
2	9½	154 "
2	10	167 "
2	10½	172 "
2¼	10	200 "
2¼	10½	212 "
2¼	11	216 "
2½	10½	245 "
2½	11	255 "

Above weights must not be considered the exact weight per set; but given as an aid in making estimates on work. Always measure from the inside of the rim of the Nut to the inside of Collar at the shoulder; this gives the length of Box or Arm.

SPRINGS.

SIZES OF STEEL: No. 2 is heavy; No. 3 is medium; No. 4 is light.

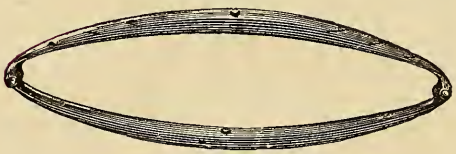


No. 1. *Double Sweep Concord.*
No. 2. *Iver's Pattern Concord.*
No. 3. *True Sweep Concord.*
No. 4. *Philadelphia Shape Carriage.*
No. 5. *Elliptic Bow Shape Carriage.*
No. 6. *Round End Carriage.*
No. 7. *Cradle Spring.*
No. 8. *Double Sweep Elliptic.*
No. 9. *French Scroll and Cross.*
No. 10. *Full "C" Pattern.*
No. 11. *French Platform and Cross.*

SPRINGS.

No. 12. Seat.

No. 13. Angular.



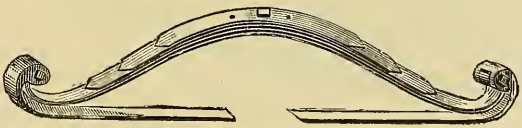
No. 14. Express Wagon.

No. 15. Lewis Patent.

SPRINGS.

No. 16. Plain End Bolster or Half Spring.

No. 17. Slotted End Bolster or Half Spring.



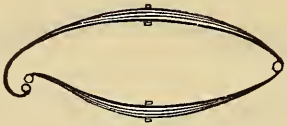
No. 18. French Head Scroll Spring.

No. 19. Scroll Spring with Loops.

SPRINGS.

No. 20 ' Half Spring.

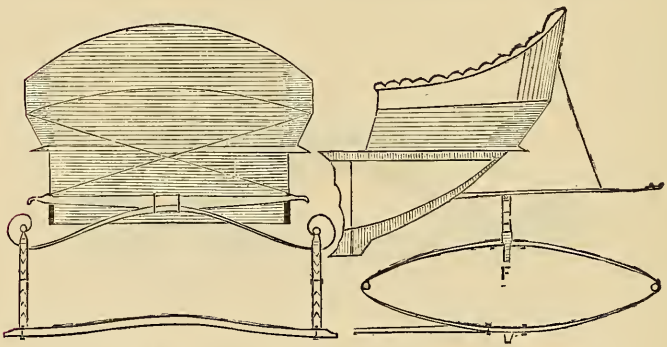
No. 21. Half Spring, for Dray.



No. 22. Scroll Elliptic.

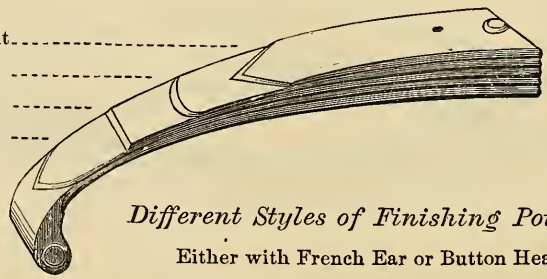
No. 23.
Side Spar Spring.

No. 24.
Half Spring for Side Spar.



No. 25. Groot's Patent Cross Spring.

Diamond Point----------
Oval " ----------
Square " --------
French " ----



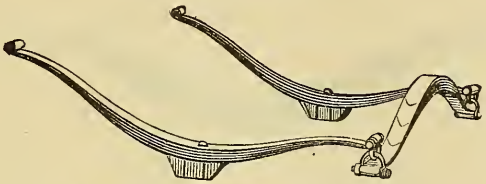
Different Styles of Finishing Points.

Either with French Ear or Button Head.

SPRINGS.

No. 26. Side Platform.

No. 27. Cross Platform.



No. 28. Side and Cross Platform.

No. 29.

No. 30.

No. 31.

No. 32.

SPRINGS.

No. 33. True Sweep Truck.

No. 34. Square Loop Truck.

No. 35. Omnibus.

No. 36. Omnibus.

Above are for extra heavy work.

CAR SPRINGS.

No. 37. Half Spring.

No. 38. Half Spring.

No. 39. Half Spring.

No. 40. Freight Car Spring.

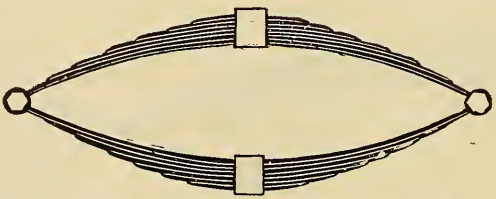
Capacity, 5,000 lbs.

32 in. long. 7 in. high.

No. 41. Engine Spring.

Capacity, 10,000 lbs.

36 in. long. 9 in. high.



No. 42. Passenger Car Spring.

42 in. long. 15½ in. high. Capacity, 5,000 lbs. Steel, 3½ × ⅜ in.

WARRANTED TEMPERED SPRINGS.

MADE FROM THE BEST ENGLISH SPRING STEEL.

PRICE LIST.

NO. OF SPRING.	WIDTH OF STEEL.	PRICE.
Nos. 1 to 6 and 8, 13 to 21, 26 to 36	1¼ and 1⅜ in. wide	20 cents per pound.
	1½ in. and wider	19 " "
9, 11 and 22	1¼ and 1⅜ in. wide	22 " "
9, 11 and 22	1½ in. and wider	21 " "

Springs 33 and 34 in. long	1 cent per pound	extra.
" 31 32 "	2 " "	"
" 28 30 "	3 " "	"
" Unpolished	½ " "	less.

Bright Sulky Springs	1¼ × 2 × 32 or 34 in.	$5 25 per set.
" "	1½ × 2 × 32 " 34	5 50 "
" "	1¼ × 3 × 32 " 34	6 00 "
Bright F. H. Seat Springs	1½ × 2 × 28 in.	3 50 "
" "	1⅜ × 2 × 28	3 62 "
" "	1½ × 2 × 28	3 75 "

PLEASE OBSERVE THE FOLLOWING:

When ordering Springs state whether you want them with or without holes, and whether with French Head or common Button Head.

French Head Springs are made with the French Points, and the Button Head Springs are usually made with the Oval Points. See Cuts illustrating different points.

Nos. 4 and 5 Cuts are the ordinary shape.

No. 14, Express Wagon Shape, with rounded ends.

When orders do not specify, as a rule Springs with holes are shipped. Concord or Side Springs are made both ways, with plain and loop ends. Bolster Springs are made both ways, with plain and slotted ends; and the Scroll Springs, Nos. 18 and 19, can be furnished either style. Concord or Side Springs, with loops, should be measured from center to center of the eyes, and the Scroll Springs in same manner.

The ordinary height of	Elliptic	Springs, inside, is	9½ in.
" "	Express	" "	10
" "	Platform	" "	5
" "	Heavy Truck	" "	6

OIL TEMPERED SPRINGS.

PRICE LIST.

NO. OF SPRING.	WIDTH OF STEEL.	PRICE.
Nos. 1 to 6 and 8	1⅛ in. wide	24 cents per pound.
13 to 21	1¼ and 1⅜ in. wide	22 " "
26 to 36	1½ in. and wider	21 " "
9, 11 and 22	1¼ and 1⅜ in. wide	24 " "
9, 11 and 22	1½ in. and wider	23 " "

Springs 33 and 34 in. long		1 cent per pound extra
" 31 " 32 "		2 " " "
" 28 " 30 "		3 " " "
" made of Swede Steel		4 " " "
" " Cast "		5 " " "
" Unpolished		½ " " less.

Bright Sulky Springs,	1¼×2×32 or 34	$5 75 per set.
" " "	1½×2×32 or 34	6 00 "
" F. H. Seat "	1¼×2×28	3 75 "
" " "	1⅜×2×28	3 88 "
" " "	1½×2×28	4 00 "

No. 25, Groot Patent Spring, furnished to order.

PLEASE OBSERVE THE FOLLOWING:

When ordering Coach Platform Springs, always give the length of the Cross Spring from center to center of the eyes.

Platform Springs 2 in. and smaller, unless otherwise ordered, are usually made with French Head, and furnished complete with Malleable Iron Shackles. Omnibus and heavy Truck Springs are made to order, and Springs of any required shape or pattern, varying from illustrations, with or without holes, can be furnished on short notice. The ordinary height of Elliptic Springs is 9½ in. inside. The Cross Springs of a set of Platform Springs should be one leaf heavier than the sides, and the length of the Side and Cross Springs for platform work must always be given, as well as the width and number of leaves, and if to hang on the center or off the center.

SIDE SPAR WAGON SPRINGS.

SWEDE STEEL, OIL TEMPERED.

1⅛ and 1¼ in.	2 Leaf,	Nos. 23 and 24		$4 00	per pair.
1⅛	1¼	3 "	"	4 75	"

Above are made of any length required, with or without holes, as may be ordered. If no holes are required the ends will be left to permit of drilling. If holes are required, give length between centers of end holes, together with width of the bar.

PHAETON AND COACH "C" SPRINGS.

SWEDE STEEL, OIL TEMPERED.

No. 7,	Cradle or Phaeton, "C" Spring and Cross,	2 Leaf	$14 00	per set.
7,	" " "	3 "	18 00	"
7,	" " "	4 "	22 00	"
10,	Coach "C" Spring,	3 Leaf	20 00	"
10,	" "	4 "	24 00	"
10,	" "	5 "	28 00	"
10,	" "	6 "	32 00	"

All of the above are made from the best brands of steel.

In ordering "C" Springs please send drawing of style and shape desired, together with the length of the Cross Spring, from center to center of the eyes.

OIL TEMPERED SEAT SPRINGS.

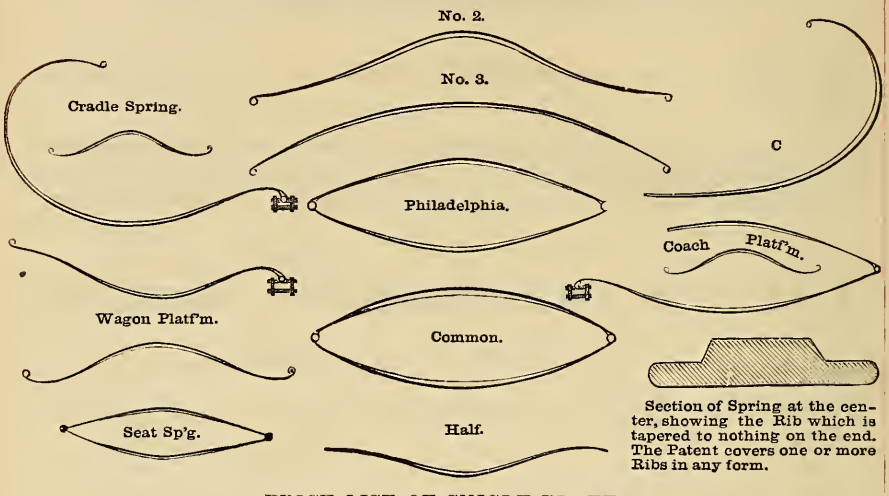
NO. 12, RIVETED HEADS.

1¼ × 2 Leaf × 24 in.	$1 25	per pair.
1⅜ × 2 " × 25	1 37	"
1½ × 2 " × 26	1 50	"
1½ × 2 " × 28	1 75	"
1¼ × 3 " × 29	2 25	"
1⅜ × 3 " × 29	2 50	"
1½ × 3 " × 29	2 75	

Purchasers of Seat Springs are expected to test them on receipt in any manner they may consider fair and just, and return at our expense any that settle or break. After such test the Springs are to be considered sound, and none will be taken back that are broken by usage or worn out.

Special quotations on large quantities

HENRY'S SINGLE AND TWO PLATE CARRIAGE SPRINGS.



Section of Spring at the center, showing the Rib which is tapered to nothing on the end. The Patent covers one or more Ribs in any form.

PRICE LIST OF SINGLE PLATE.

No.	Width.	Length Fore Back.	Open.	Bearing.	Elliptic French Heads.	Weight.	Price.
0	1¼	26 and 28	8 and 8½	3½ in.	Suitable for one person only.	8½ lbs.	$5 50
1	1¼	28 and 30	8 and 8½	3½	" " light road wagon, 1 person.	10 "	6 00
2	1¼	30 and 32	8½ and 9	3½	" " No Top " 2 "	12 "	6 50
3	1¼	32 and 34	9 and 9½	4	" " Light Top " 2 "	14 "	7 00
4	1¼	34 and 36	9½ and 10	4½	" " Heavy " " 3 "	16 "	7 50

1¼	in. Side Springs, No. 2 or 3 Pattern,	46 to 50	in.	in length to center of eyes		$6 00
1¼	" " " "	52 " 54	"	" " "		6 50
1½	" " " "	46 " 50	"	" " "		7 00
1½	" " " "	52 " 54	"	" " "		7 50

Below is a List of Springs, the same height, length, weight and open:

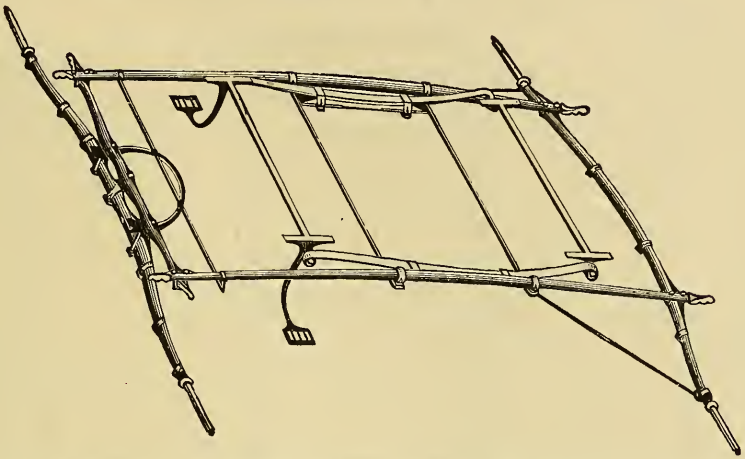
No.	Width.	Length.	Open.	Bearing.	Elliptic French Heads.	Weight.	Price.
00	1¼	Both 26	8	3½ in.		8 lbs.	$5 25
5	1¼	" 28	8	3½		10 "	5 75
6	1¼	" 30	8½	3½		11 "	6 25
7	1¼	" 32	9	3½		13 "	6 75
8	1¼	" 34	9½	4		15 "	7 25
9	1¼	" 36	10	4½		17 "	7 75

PRICE LIST OF TWO PLATE ELLIPTIC RIBBED.

Kind of Springs.	Width.	Length.	Open.	Kind of Carriage.	Price Per Set.
A. Back Spring B. Front "	1¼	34	9	Heavy Top Buggy	$7 50
B. Back Spring C. Front "	1¼	34	9	Light Top Buggy	7 50
B. Back Spring C. Front "	1¼	34	9	Heavy No Top Buggy	7 50
C. Back Spring D. Front "	1¼	34	9	Light No Top Buggy	7 00
C. Back 2 Spring B. Front 1 "	1¼	34	9	Top Phaeton	11 00
D. Back 2 Spring B. Front 1 "	1¼	34	9	No Top Phaeton	11 00

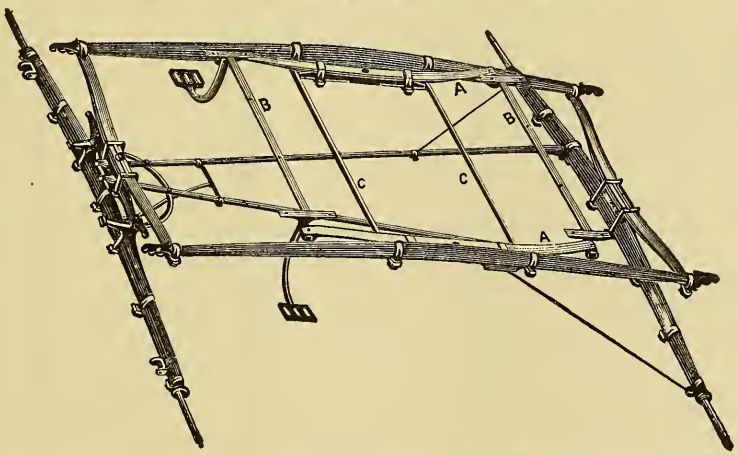
CHAMBERLIN'S SIDE SPAR SPRINGS.

PATENTED MAY 26, 1874.



IMPROVED METHOD OF HANGING THESE PATENT SIDE SPAR SPRINGS WITHOUT THE AID OF END SPRINGS OR REACHES.

See the Morris Buggy among Illustrations.



FOR AN ORDINARY SIDE SPAR BUGGY, WITH REACHES AND END SPRINGS, COMBINED WITH THIS IMPROVED METHOD.

A A is a spring running parallel with side spar, and supported by steel cross bars, C C; B B, cross bars supporting body.

The above meets with ready sale, and is giving perfect satisfaction; it combines the light weight and stylish appearance of the Side Spar Buggy with the elasticity and ease of the full Elliptic Spring. This improvement, running *lengthwise* of the Carriage, can be used under bodies of *any width* without detracting from ease of riding—an advantage it possesses over any other Spring in use. *See illustrations among Carriages.*

CARRIAGE AND EXPRESS SPRINGS.

AVERAGE WEIGHTS, USUAL LENGTHS, ORDINARY SIZE OF STEEL.

Elliptic Shapes.

WIDTH.	NO. OF LEAVES.	LENGTH.	AVERAGE WEIGHT PER PAIR.
1⅛ in.	3	32 in.	23 pounds.
1⅛	4	32	25 "
1¼	3	32	27 "
1¼	3	34	28 "
1¼	3	36	30 "
1¼	4	32	31 "
1¼	4	34	32 "
1¼	4	36	35 "
1¼	5	36	38 "
1⅜	3	34	31 "
1⅜	3	36	33 "
1⅜	4	34	37 "
1⅜	4	36	39 "
1⅜	5	36	42 "
1½	3	34	34 "
1½	3	36	36 "
1½	4	34	40 "
1½	4	36	42 "
1½	4	38	46 "
1½	5	34	48 "
1½	5	36	50 "
1½	5	38	51 "
1½	6	36	59 "
1½	6	38	64 "
1¾	4	36	50 "
1¾	4	38	53 "
1¾	5	36	60 "
1¾	5	38	66 "
1¾	6	36	69 "
1¾	6	38	75 "
1¾	7	36	77 "
1¾	7	38	80 "
2	4	36	54 "
2	4	38	60 "
2	5	36	69 "
2	5	38	76 "
2	6	36	79 "
2	6	38	85 "
2	7	36	86 "
2	7	38	90 "
2¼	6	36	95 "
2¼	7	36	102 "
2¼	8	36	115 "
2½	7	36	160 "
2½	8	36	190 "

SPRINGS.

AVERAGE WEIGHTS, USUAL LENGTHS, ORDINARY SIZE OF STEEL.

Half Springs—Plain Ends.

WIDTH.	NO. OF LEAVES.	LENGTH OF SPRING.	AVERAGE WEIGHT PER PAIR.
1½ in.	3	42 in.	20 pounds.
1½	4	42	23 "
1½	5	42	27 "
1¾	3	42	23 "
1¾	4	42	29 "
1¾	5	42	35 "
1¾	6	42	38 "
2	3	42	27 "
2	4	42	30 "
2	5	42	36 "
2	6	42	41 "

Half Springs—Slotted Ends.

WIDTH.	NO. OF LEAVES.	LENGTH BETWEEN STAKES.	AVERAGE WEIGHT PER PAIR.
1½ in.	3	36 in.	18 pounds.
1½	4	36	23 "
1½	5	36	27 "
1¾	3	36	22 "
1¾	4	36	26 "
1¾	5	36	31 "
1¾	6	36	36 "
2	3	36	26 "
2	4	36	29 "
2	5	36	35 "
2	6	36	46 "

Side Springs—Plain Ends.

WIDTH.	NO. OF LEAVES.	LENGTH OF SPRINGS.	AVERAGE WEIGHT PER PAIR.
1¼ in.	4	54 in.	26 pounds.
1¼	5	54	31 "
1½	4	54	32 "
1½	5	54	38 "
1¾	4	54	40 "
1¾	5	54	44 "
1¾	6	54	50 "

Side Springs—With Loops.

WIDTH.	NO. OF LEAVES.	LENGTH BETWEEN LOOPS.	AVERAGE WEIGHT PER PAIR.
1¼ in.	4	50 in.	27 pounds.
1¼	5	50	33 "
1½	4	50	34 "
1½	5	50	39 "
1¾	4	50	42 "
1¾	5	50	47 "
1¾	6	50	54 "

Scroll Springs.

WIDTH.	NO. OF LEAVES.	LENGTH BETWEEN SCROLLS.	AVERAGE WEIGHT PER PAIR.
1½ in.	3	38 in.	36 pounds.
1½	4	38	40 "
1½	5	38	44 "
1¾	3	38	41 "
1¾	4	38	46 "
1¾	5	38	52 "
2	3	38	46 "
2	4	38	51 "
2	5	38	56 "

SPRINGS.

AVERAGE WEIGHTS, USUAL LENGTHS, ORDINARY SIZE OF STEEL.

Wagon Platform Springs.

FOUR SIDE AND TWO CROSS MAKE A SET.

WIDTH.	NO. OF LEAVES.	LENGTH OF SIDE AND CROSS.	AVERAGE WEIGHT PER SET.
1¼ in.	4	36 in. 38 in.	60 pounds.
1¼	4 and 5	38 40	70 "
1¼	5	38 40	76 "
1⅜	4	36 38	65 "
1⅜	4 and 5	38 40	75 "
1⅜	5	38 40	85 "
1½	3	36 38	70 "
1½	3 and 4	38 40	78 "
1½	4	38 40	72 "
1½	4 and 5	38 40	83 "
1½	5	38 40	90 "
1½	5 and 6	38 40	93 "
1¾	4	38 40	100 "
1¾	4 and 5	38 40	106 "
1¾	5	38 40	103 "
1¾	5 and 6	38 40	108 "
1¾	6	38 40	120 "
2	5 and 6	40 42	140 "
2	6 " 7	40 42	160 "
2	7 " 8	40 42	195 "
2¼	6 " 7	40 42	205 "
2¼	7 " 8	40 42	225 "
2½	8 " 9	40 42	275 "
2½	9 " 10	42 44	295 "
2½	10 " 11	42 44	308 "
2¾	10 " 12	42 44	355 "
2¾	12 " 14	42 44	390 "
3	12 " 14	44 48	450 "

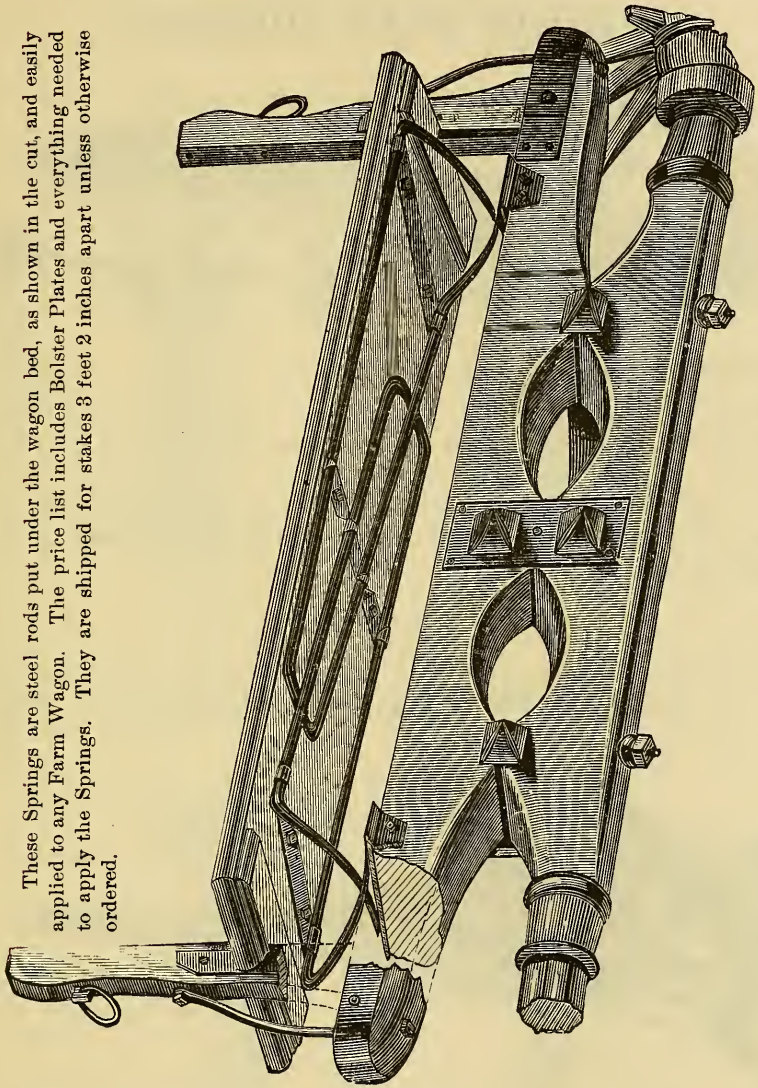
Heavy Truck Springs.

WIDTH.	NO. OF LEAVES.	USUAL LENGTHS.	APPROXIMATE WEIGHT PER SET.
2½ in.	10 and 12	3 ft. 2 in. to 3 ft. 10 in.	260 pounds.
2½	12 " 14	3 2 3 10	300 "
2½	14 " 16	3 2 3 10	350 "
2¾	12 " 14	3 2 3 10	375 "
2¾	14 " 16	3 2 3 10	450 "
3	12 " 14	3 2 3 10	500 "
3	14 " 16	3 2 3 10	575 "

The lengths and weights in our list of Springs is given only as an approximation, and must not be taken as being perfectly correct and accurate; but it will assist the manufacturer in making calculations on the cost of his work.

TORSION WAGON SPRINGS.

These Springs are steel rods put under the wagon bed, as shown in the cut, and easily applied to any Farm Wagon. The price list includes Bolster Plates and everything needed to apply the Springs. They are shipped for stakes 3 feet 2 inches apart unless otherwise ordered.

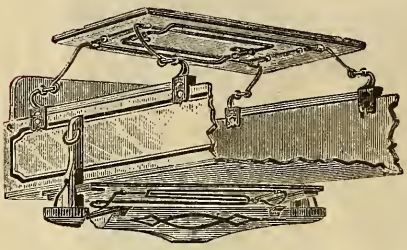


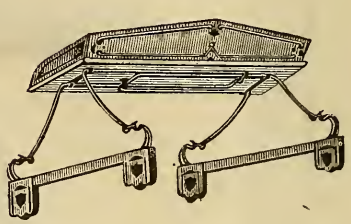
These Springs raise the box but little; are light, weighing from 30 to 80 pounds. Any person can apply them without trouble. They have been thoroughly tested in all kinds of work with perfect success.

CARRYING CAPACITY.		PRICE PER SET.
No. 1.	1,000 pounds	$9 00
1½.	1,500 "	10 00
2.	2,000 "	11 00
2½.	2,500 "	12 00
3.	3,000 "	13 00
3½.	3,500 "	14 00
4.	4,000 "	15 00
4½.	4,500 "	16 00
5.	5,000 "	17 00

CARRYING CAPACITY.		PRICE PER SET.
No. 5½.	5,500 pounds	$18 00
6.	6,000 "	19 00
6½.	6,500 "	20 00
7.	7,000 "	21 00
7½.	7,500 "	22 00
8.	8,000 "	23 00
9.	9,000 "	24 00
10.	10,000 "	25 00

TORSION SEAT SPRINGS.

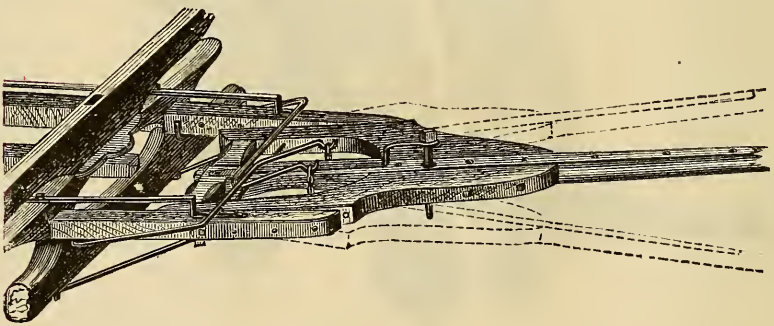




Wagon Seat, with Springs complete $5 25
Seat Springs complete, without Seat 3 75
Mounted on frame to show the operation of the Springs, for store sample 5 50

The above Springs are very elastic and easy for one person, and same with two or three. They cost but a little more than the common Elliptic Seat Spring, and are not easily broken by ordinary use.

TORSION POLE SPRINGS.



No. 1. Complete ..... $3 00 per set.
2. " heavy ..... 3 25 "

The Pole Spring can be applied in a moment's time to any size of lumber wagon, and is certainly a great relief to a team in holding the pole to its proper height. They have given universal satisfaction wherever they have been used.

SPENCER SEAT SPRING.

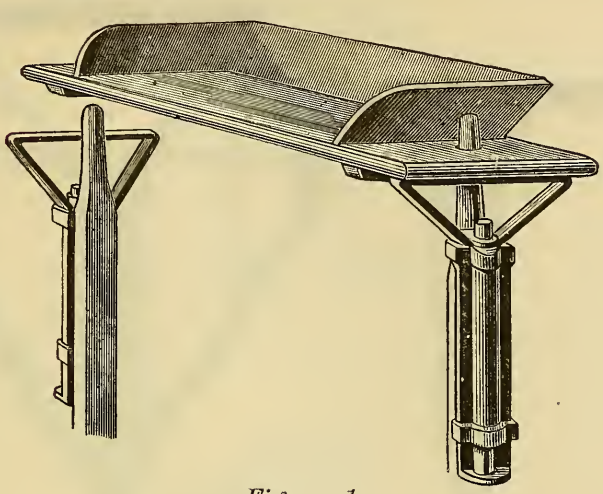


Figure 1.

Light, for light wagons ..... $4 00 per pair.
Heavy, for heavy wagons ..... 5 00 "

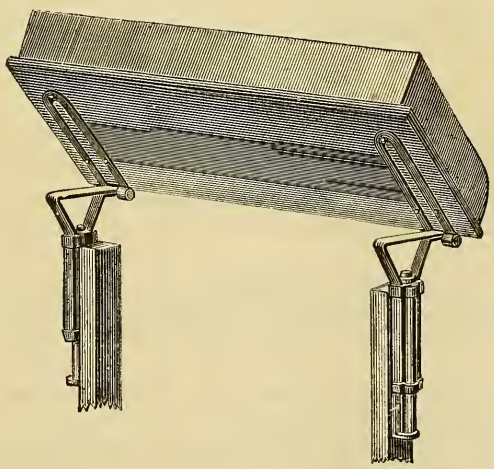


Figure 2.

For Trucks — Turn-over Seat ..... $6 00 per pair.

SPENCER SEAT SPRINGS.

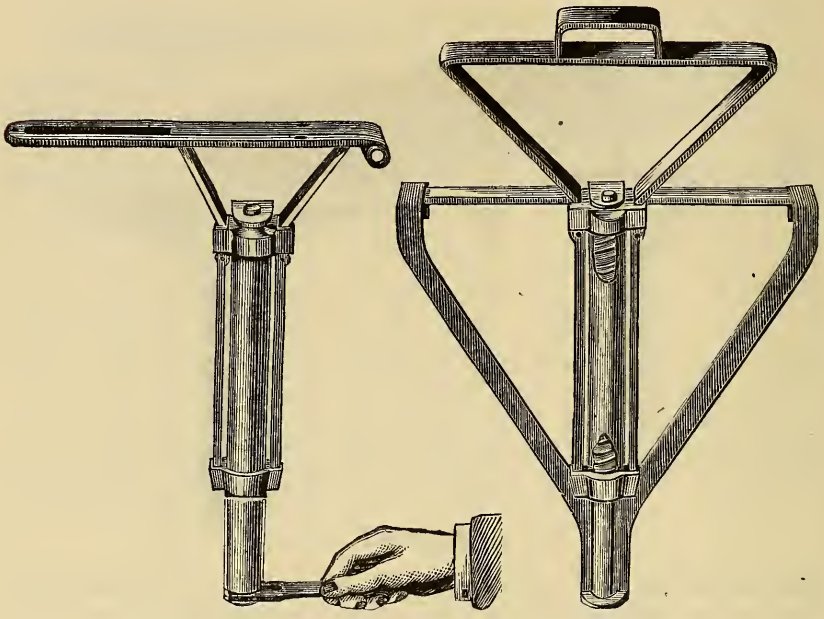


Figure 4. *Figure 3.*

Figure 3 is for farm wagons..... $4 00 per pair.

REMARKS.

Figure 1 Spencer Seat Spring is adapted for heavy wagons and trucks; being attached to the Rungs, are entirely under the seat out of the way.

Figure 2 Spencer Seat Spring is made especially for truck wagons, where it is desirable to turn the seat over out of the way of the load, and also to keep it dry in wet weather.

Figure 3 is especially adapted to farm wagons, and every farmer with these Springs can make his own wagon seats. They can be used with or without the top loop, as parties may desire. It requires no bolts or hooks to fasten it on the wagon box.

Figure 4 shows the manner by which the Spring and Frame is removed from the strap, in order to attach to the Rungs.

To keep them in perfect order they should be oiled occasionally, and to do this bear down on the end of the seat which uncovers the upper portion of the Rod.

In case the Spiral Spring, as shown in Figure 3, should break, a duplicate can be sent by mail to any part of the United States, for the sum of fifty cents.

JUMP-SEAT IRONS.

MELLINGER PATENT.

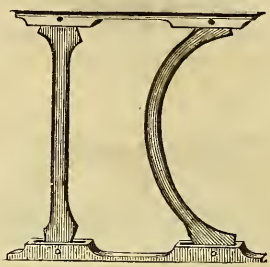


Figure 1 represents the supports as inserted in their bearings, with only sufficient play to allow the seat to move forward and back.

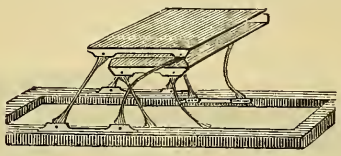


Figure 2 represents the Patent Jump-Seat when adjusted for a single seat.

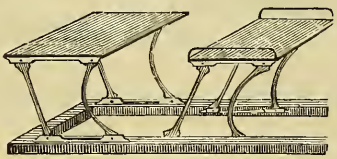


Figure 3 illustrates the Patent Jump-Seat when arranged for two seats.

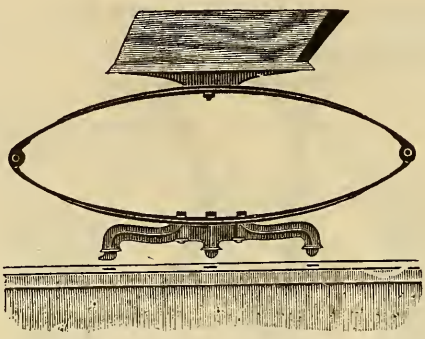
PRICE LIST.

FITTED READY TO BE ATTACHED.

10 in. Seat Iron (single)	$2 75 each.
12 " "	3 00 "
Combination Seat (double)	5 75 "

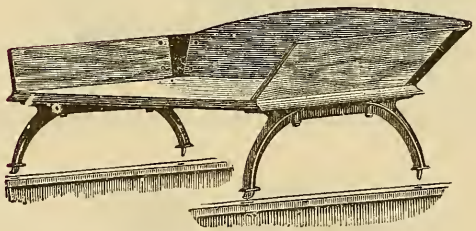
These Jump-Seat Irons have been thoroughly tested by carriage makers and pronounced superior to all others now in the market.

SEAT RISERS.



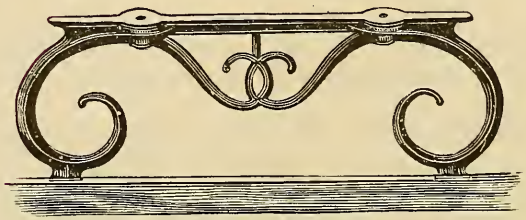
Seat Spring Attachment.

Beers' Patent ..... 75 cents per pair.



Plain Standard Attachment.

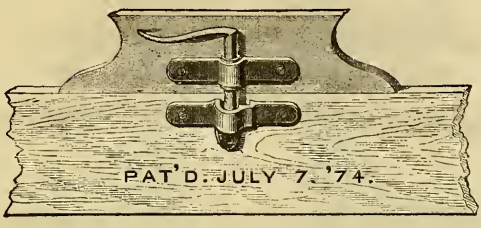
Beers' Patent ..... 95 cents per pair.



Scroll Pattern Attachment.

Beers' Patent..... $1 10 per pair.

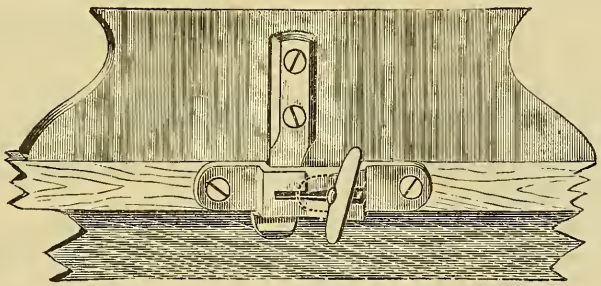
SEAT FASTENERS.



Lamb's Patent.

Price ..... $4 00 per dozen set.

Above cut represents the simplest Fastener now in use. It can be attached to the seat by any person, and fastens the seat to the wagon box perfectly secure. It is more durable than any other, and the cheapest Fastener now in the market.



Cooper's Patent.

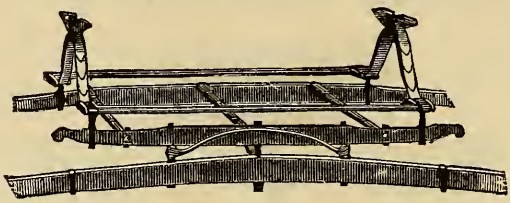
Price ..... $4 00 per dozen set.

By referring to the above cut, it will be seen that the Fastener is composed of three pieces, a Seat-hook, a Clasp into which the Seat-hook is inserted, and a Thumb-piece revolving in the Clasp.

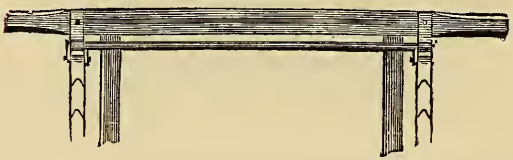
The Clasp is provided on its outer surface with inclines rising in opposite directions on which the Thumb-piece turns, and is secured by these inclines from becoming loose.

The Thumb-piece is provided with a cam which turns with it and is pressed against the Seat-hook, thus securing the Hook firmly in the Clasp.

SIDE SPRING CONNECTING ROD.



For Side Spring Buggies.

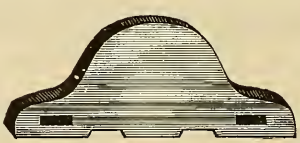


Showing the Connection with the Springs and Axle.

A Connecting Rod for Side Springs has long been needed, and the above is so simple that it will commend itself. Arms are attached to each of these rods, to which the springs are attached, these arms taking the place of the ordinary shackle, and the rods are fastened to the gearing the same as a shackle. By examining the cut it will be seen that depressing either spring will turn the rod, which will draw the opposite spring equally, thus entirely obviating the rocking of side springs. The load may be all on one side of the buggy and the body will still be level, each spring being equally depressed and receiving equal strain. It is therefore evident that as every strain is divided between the two springs, they will be less liable to break, and springs can be used enough lighter to save the entire cost of the rods. These rods are made in two parts, which are to be welded together by the carriage maker, that they may be any desired length, but the width of the spring should always be specified when ordering.

⅝ in.	Rod for One-Seat Buggy	$2 25	per set.
¾	" larger vehicles	2 50	"
½	Steel Rod for light work	2 50	"

RUBBER BUFFERS.

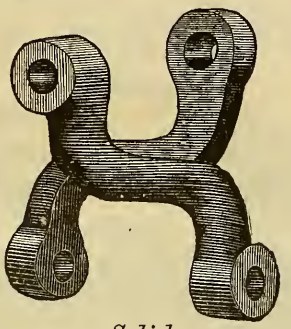


For Springs.

Width	1½	in.,	height	3	in.,	length	7	in.,	weight	2	pounds--- 50 cents per pound.
"	1¾	"		3½	"		8½	"		3	" --- 50 " "
"	2	"		4	"		9	"		5	" --- 50 " "

Round Buffers furnished at same price.

PLATFORM SPRING SHACKLES.



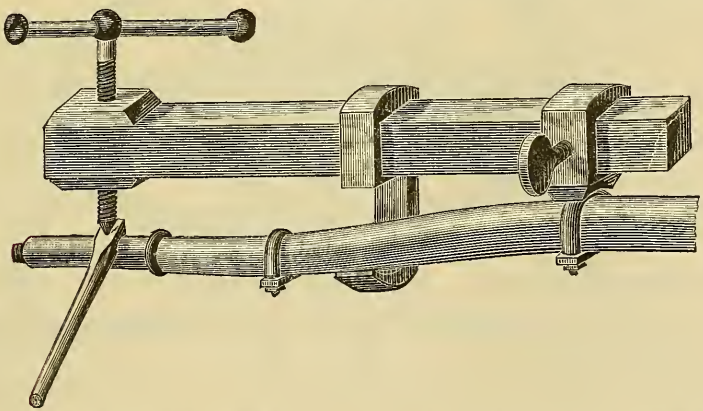
Solid.

MADE OF MALLEABLE IRON, FINISHED WITH BOLTS AND NUTS OF WROUGHT IRON COMPLETE.

Four make one Set.

Width of Spring,	1¼	1½	1¾	2	2¼	2½	2¾	3	in.
Price	$1 75	1 75	2 00	2 00	2 35	3 00	3 30	3 75	per set.

AXLE SETTER AND SHAFT STRAIGHTENER.

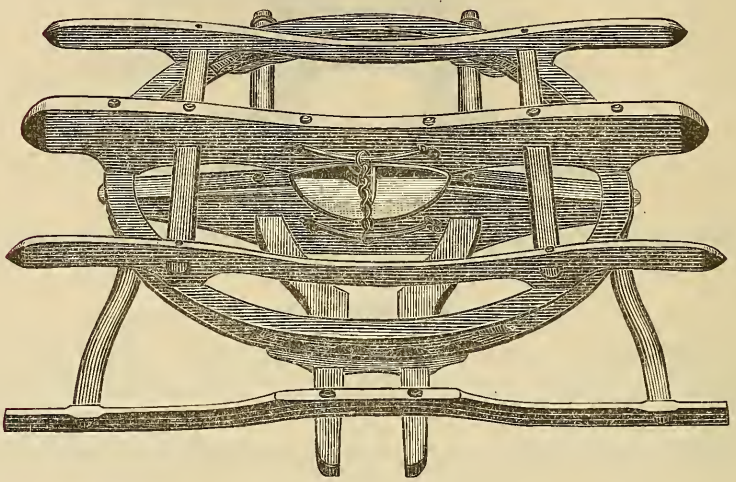


No. 1. Sets Axle 1⅛ in. and less $7 00
2. " " 1½ " " 8 00
No. 3. Sets Axle 2 in. and less $12 00
4. " " 3½ " " 14 00

This simple contrivance will straighten any Bar, Shaft or Axle, no matter in what shape bent — perform the operation of Axle Setting — and in less than one-tenth the time required in the old way. Gives better satisfaction to both owner and mechanic, for it

1. Does not require the removal of a single clip or bolt. Take off one wheel, attach the Setter, and in from 10 to 30 minutes the work is done — the Axle left stiffer than by the old way of removing and heating it.
2. Leaves no hammer or other mark, or cold crack.
3. Saves taking the temper out of steel or Case-Hardened Axles.
4. Does not crack or break the spindles.
5. Does not disturb the painting or finest striping.

NELSON'S FIFTH WHEEL.

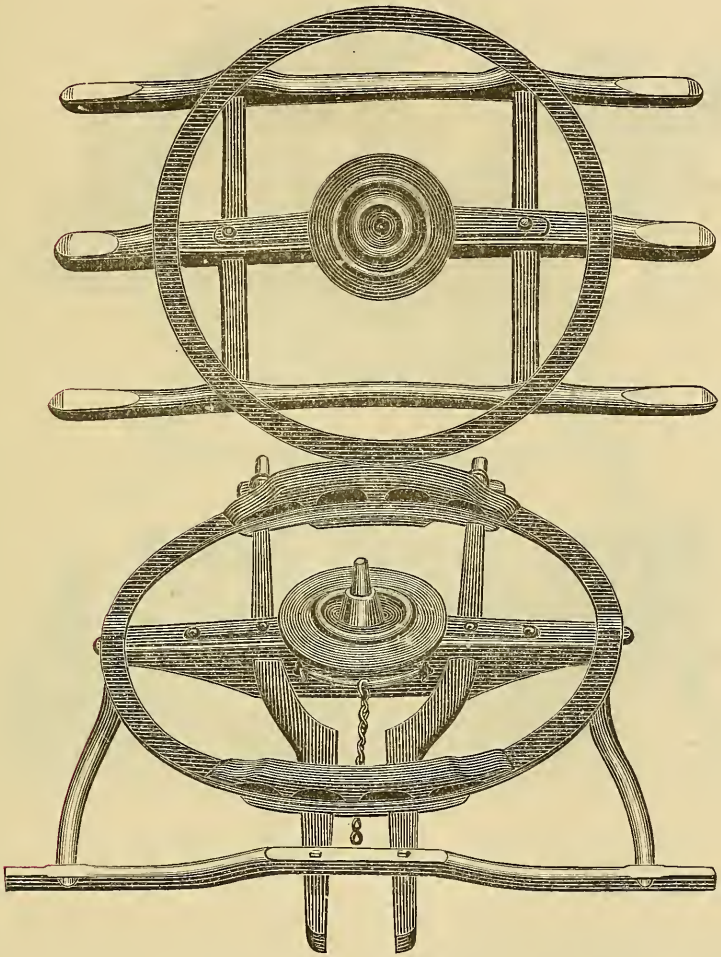


Nelson's Patent.

FOR HEAVY TRUCK WAGONS, OMNIBUSES, EXPRESS WAGONS AND THREE SPRING WAGONS.

The above cut represents a front view of the bolster and front platform of a truck, with the Nelson Patent Fifth Wheel attached. The invention consists in so constructing the Fifth Wheel, or the circle upon which the forward Axle swivels, that the front wheels may accommodate themselves to ruts and inequalities of the road. By thus constructing the Fifth Wheel, the front Axle is allowed to freely oscillate, and conform to the inequalities of the road without any wrenching or twisting strain of the body or box of the Wagon containing the load. These features are especially valuable in Heavy Trucks, Ice Wagons and Omnibuses, and are advantages exclusively its own over any other Fifth Wheel now made for this purpose, and cannot fail in rendering itself indispensable to all manufacturers of this class of work.

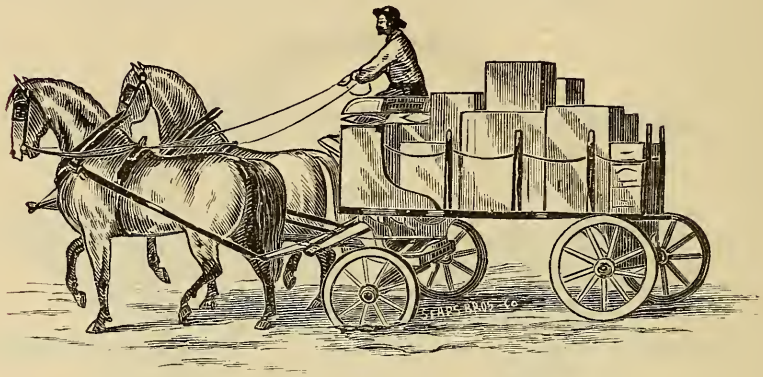
NELSON'S FIFTH WHEEL.



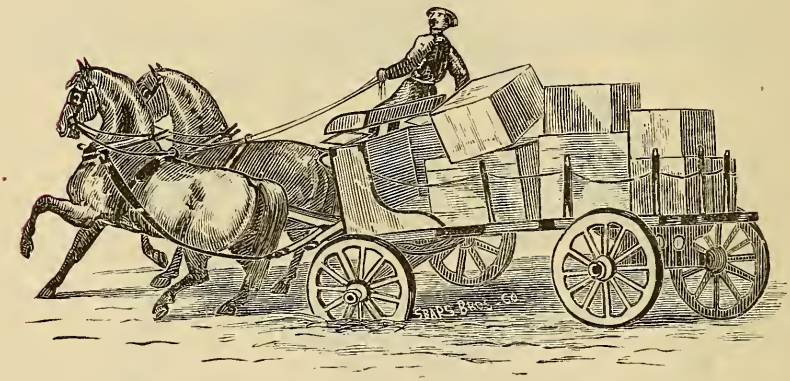
CONSTRUCTION.

The outside circles are wrought iron, and the inside circles or plates are best malleable iron. The outside upper circle has a plain bearing surface, while the lower outside circle has raised portions front and rear, of cast iron, chill-hardened, on which the upper circle rests and swings. The inside circles have concave and convex rings, the lower plate having a King Bolt Socket, fitting an aperture in the upper plate. The upper plate projects below the plane of the outside upper circle sufficient to rest firmly on the lower plate on the bolster. The King Bolts are made tapering in order to give sufficient play to the front Bolster and front Axle.

NELSON'S FIFTH WHEEL.



Wagon in Rut with Patent Fifth Wheel.



Wagon in Rut without Patent Fifth Wheel.

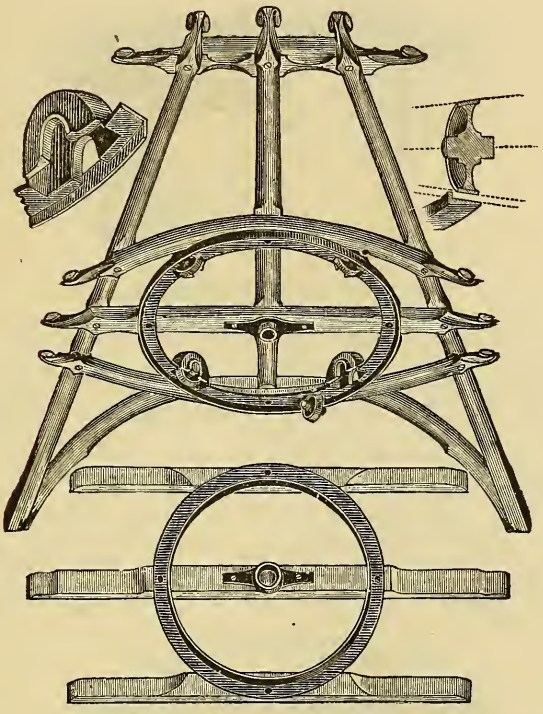
CLAIMS.

First.	It dispenses with reaches.
Second.	Only one-fourth the usual friction in turning.
Third.	It saves in king bolts.
Fourth.	All vehicles are able to turn in their own length.
Fifth.	It assures lightness and durability.
Sixth.	It saves 50 per cent. in springs and beds.

PRICE LIST.

Sizes	16	20	24	30	32	34	36	in. circle.
Nos	1	2	3	4	5	6	7	
Price	$10 00	12 00	15 00	20 00	20 00	25 00	25 00	each.

HITT'S FIFTH WHEELS.



Hitt's Patent Anti-Friction.

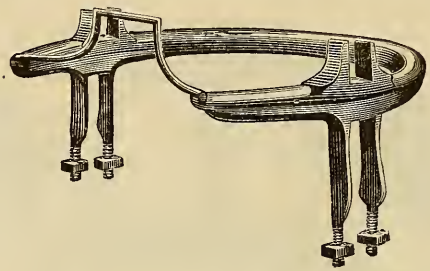
USED ON PLATFORM SPRING WAGONS, THREE SPRING WAGONS AND OMNIBUSES.

18 in. Diameter with Center Plates ..... $24 00 per dozen.
20 " " " " ..... 32 00 " "

This Wheel, as constructed, prevents *friction*, which is so objectionable in the old style. It carries the vehicle steady, doing away with all side motion, and enables a heavily loaded wagon to be cramped easily, and no dirt can get between the upper and lower surfaces.

CONSTRUCTION. — The lower or bottom circle, is made with an outer flange extending upward to the top of the upper circle, and has from four to seven recesses according to size, in which there are friction wheels inserted, that run on journals. The upper circle is made to fit inside the outer flange of the lower circle. It rests upon the friction wheels, and has a depending flange on the inside to cover the inner rim of the lower circle. The friction wheel and under side of the inner circle have the requisite bevel to avoid friction between their surfaces.

FIFTH WHEELS.

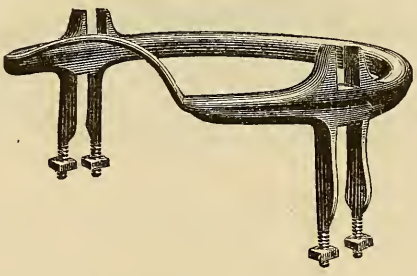


No. 1. Derby Fancy Front.

With Clips Forged from One Piece of Norway Iron.

SIZE OF IRON.	OUTSIDE DIAMETER.					PRICE PER DOZ.
⅝ in.	12	13	14	15	16 in.	$16 00
¾	12	13	14	15	16	17 50
⅞	12	13	14	15	16	26 00
Extra with Square for Reach						1 00
" Cross-Bar like No. 4						2 00
" Flanges for Reach						2 00

In ordering always give the diameter of Wheel, size of the Iron, and size square of the Axle.



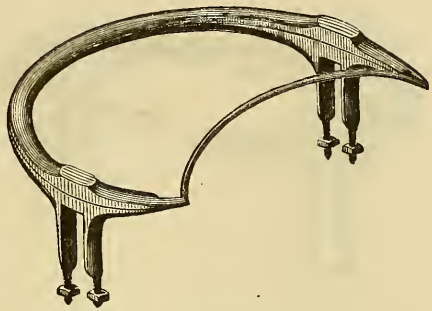
No. 2. Derby Plain Front.

With Clips Forged from One Piece of Norway Iron.

SIZE OF IRON.	OUTSIDE DIAMETER.					PRICE PER DOZ.
⅝ in.	12	13	14	15	16 in.	$15 00
¾	12	13	14	15	16	16 50
⅞	12	13	14	15	16	24 00
Extra with Square for Reach						1 00
" Cross-Bar like No. 4						2 00
" Flanges for Reach						2 00

In ordering always give the diameter of Wheel, size of the Iron, and size square of the Axle.

FIFTH WHEELS.

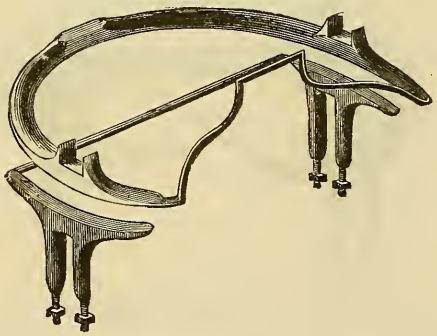


No. 3. Cincinnati Style.

With Clips Forged from One Piece of Norway Iron.

SIZE OF IRON.	OUTSIDE DIAMETER.					PRICE PER DOZ.
⅝ in.	12	13	14	15	16 in.	$12 50
¾	12	13	14	15	16	14 00
⅞	12	13	14	15	16	21 00
Extra with Square for Reach						1 00

In ordering always give the diameter of Wheel, size of the Iron, and size square of the Axle.



No. 4. Kimbark's Combination.

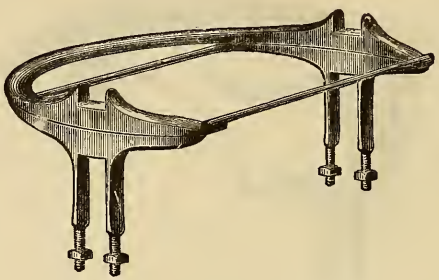
With Clips Forged from One Piece of Norway Iron.

SIZE OF IRON.	OUTSIDE DIAMETER.				PRICE PER DOZ.
⅝ in.	12	13	14	in.	$24 00
¾	12	13	14		26 00

Our No. 4 Wheel is made as represented for us, having the spot for Perch, with Cross-Bar to sustain the under circle, making it less liable to rattle than any other style.

In ordering always give the diameter of Wheel, size of the Iron, and size square of the Axle.

FIFTH WHEELS.



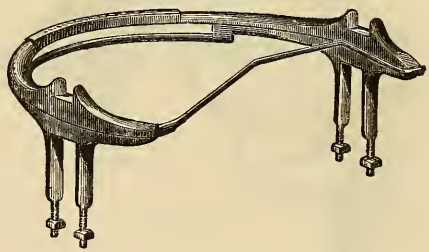
No. 5. Smith's Pattern.

With Clips Forged from One Piece of Norway Iron.

SIZE OF IRON.	OUTSIDE DIAMETER.	PRICE PER DOZ.
⅝ in.	12 13 14 15 16 in.	$24 00
¾	12 13 14 15 16	26 00
All Diameters of $\frac{9}{16}$ and ½ in. Iron		24 00

Fifth Wheels with Three Squares extra.

In ordering always give the diameter of Wheel, size of the Iron, and size square of the Axle.



No. 6. Larkin's Patent.

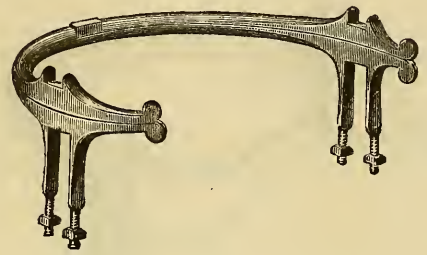
With Clips Forged from One Piece of Norway Iron.

SIZE OF IRON.	OUTSIDE DIAMETER.	PRICE PER DOZ.
⅝ in.	12 13 14 15 16 in.	$29 50
¾	12 13 14 15 16	32 00
All Diameters of $\frac{9}{16}$ and ½ in. Iron		29 50
Without Square on back of Top Circle, a net deduction of		3 00

In ordering always give the diameter of Wheel, size of the Iron, and size square of the Axle.

The long square spot on the top circle is especially adapted to Double Perch Vehicles, and for single a short square spot can be made.

FIFTH WHEELS.

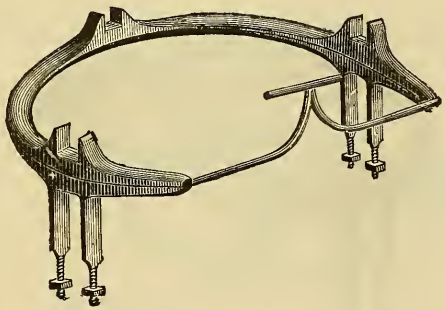


No. 7. Smith's Pattern.

With Clips Forged from One Piece of Norway Iron.

SIZE OF IRON.	OUTSIDE DIAMETER.						PRICE PER DOZ.
⅝ in.	12	13	14	15	16	in.	$24 00
¾	12	13	14	15	16		26 50
All Diameters of $\frac{9}{16}$ and ½ in. Iron							24 00
Without Square on top of Back Circle a net deduction of							3 00

In ordering always give the diameter of Wheel, size of the Iron, and size square of the Axle.



No. 8. McGuire's Patent Single.

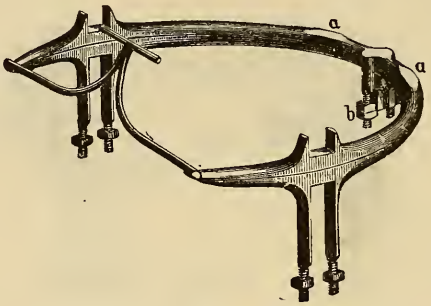
With Clips Forged from One Piece of Norway Iron.

SIZE OF IRON.	OUTSIDE DIAMETER.				PRICE PER DOZ.
½ in.	12	13	14	in.	$15 00
⅝	12	13	14		16 00

In ordering always give the diameter of Wheel, size of the Iron, and size square of the Axle and Perch.

This Circle has an extra Clip raised on the top section for the Perch to rest on, which gives it a great support as it forms a stay on each side of the Perch to prevent it from breaking. They are made from the best Norway iron, well fitted and finished, polished bright all over.

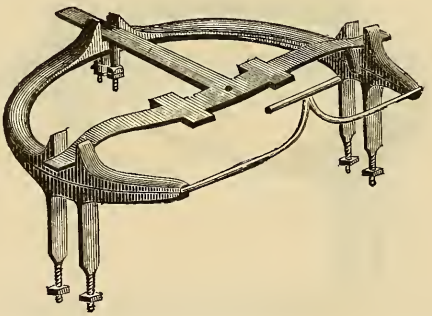
FIFTH WHEELS.



No. 9. McGuire's Patent Double Perch.

SIZE OF IRON.	OUTSIDE DIAMETER.					PRICE PER DOZ.
$\frac{5}{8}$ in.	12	13	14	15	16 in.	$18 00
$\frac{3}{4}$	12	13	14	15	16	19 00
All Diameters of $\frac{9}{16}$ and $\frac{1}{2}$ in. Iron						18 00

This Circle has the Anti-Rattler forged solid on the top section of the Circle, and two square spots for the Perches to rest on. They are well finished, and polished bright all over. In ordering be sure to give the length outside of both Perches, so that the square spots (*a a*) will be made right length.



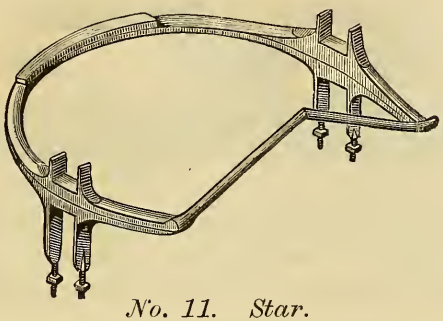
No. 10. McGuire's Patent Combination.

SIZE OF IRON.	OUTSIDE DIAMETER.					PRICE PER DOZ.
$\frac{5}{8}$ in.	12	13	14	15	16 in.	$24 00
$\frac{3}{4}$	12	13	14	15	16	25 00
All Diameters of $\frac{9}{16}$ and $\frac{1}{2}$ in. Iron						24 00

As shown by the above engraving this Circle is furnished complete, with Head Block, Perch Plate and Anti-Rattler all combined. The top circle has three forms of Clips raised to support the Perch and Head Block. All the Clips, Stays and Perch Plate are forged solid from the best Norway iron, and are extra well fitted and finished. The Circle is polished bright all over.

Give diameter of Circle, size of Iron, Axle and Perch, when ordering.

FIFTH WHEELS.



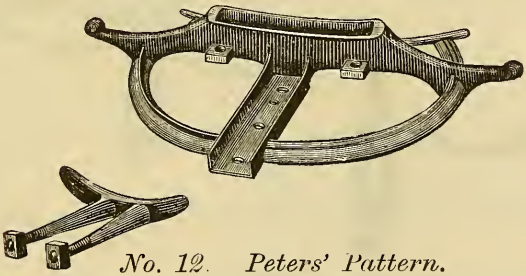
No. 11. Star.

SIZE OF IRON.	OUTSIDE DIAMETER.	PRICE PER DOZEN.
5/8 in.	10, 12, 13 and 14 in.	$16 50
3/4	12, 14 and 16	18 50

The above Wheel is made with a long center spot on top of the circle, for double reach.

In ordering, always give the diameter of Wheel, size of the iron, and size square of the Axle.

HEAD BLOCK, FIFTH WHEEL AND PERCH PLATE, COMBINED.



No. 12. Peters' Pattern.

10 in. Fifth Wheel and Head Block	$16 50	per dozen.
12 " " " "	20 00	"
14 " " " "	24 00	"

Above cut represents a Fifth Wheel made of malleable iron, being very strong, compact and economical. It saves making Head Block, forging Perch or T Plate, the bolting and fitting to the Head Block, mortising Head Block, tenoning and scrolling the Perch.

DIRECTIONS. — Cut off Perch and Perch Plate the length desired, lay them in the Groove back of Head Block, and bolt fast to the Perch.

FIFTH WHEEL ANTI-RATTLER.

Curtiss' Patent.

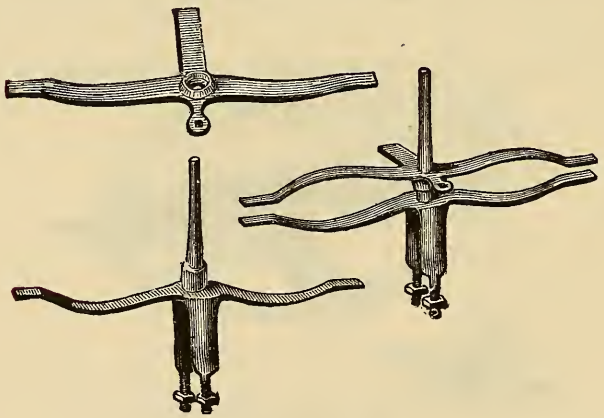
⅝ and ¾ in. Iron..... $5 00 per dozen.

The Anti-Rattler is used upon Fifth Wheels where they have become worn and begin to rattle. It is bolted on the under side of the Perch, the wheel resting on the leather packing, and by turning up the set screw makes it fit snugly to the wheel.

Packed in Boxes of 1 Doz. each.

PERCH AND BED PLATES.

FOR FIFTH WHEELS.



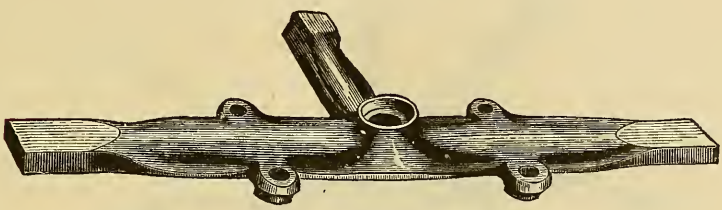
Smith's Patent.

12, 13, 14 in. Diameter..... $2 25 per set.

In ordering always give the diameter of the Wheel wanted for.

The upper figure represents the perch or head block plate inverted. The lower figure represents the bed plate in an upright position, and the right hand figure represents the plates put together as when in use. These plates for strength, durability and safety are not excelled by any other for coupling the Axle.

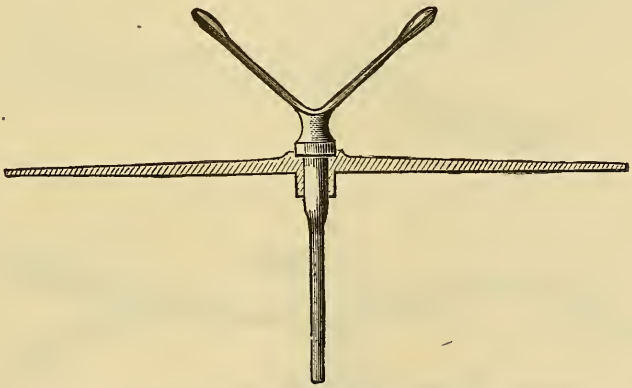
PERCH AND BED PLATES.



Auburn Pattern, for Single Perch.

SIZE OF SPRING.	SIZE OF KING BOLT.		PRICE PER DOZEN.
1¼ in.	No. 1.	½ in. Single Perch,	$7 50
1¼	2.	9/16 "	7 50
1⅜	2.	9/16 "	7 50
1½	3.	⅝ "	7 50

Above will answer for any diameter of Fifth Wheel, the ends being left to draw out and use to suit convenience. Also, stock enough on Perch Stub to draw out and weld to Perch, and are fitted for the Auburn King Bolt.



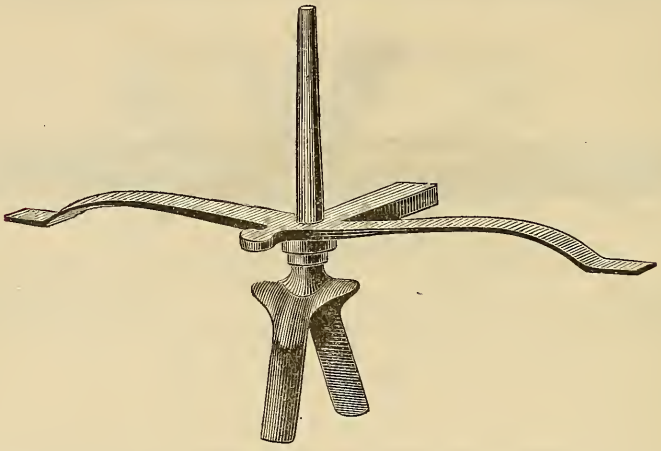
Sectional View of Perch Plate and King Bolt combined.

View of the under side.

Auburn Pattern, Double Perch and Bed Plate.

1¼ in.,	for No. 2	King Bolt	$9 50	per dozen.
1⅜	" 2	"	9 50	"
1½	" 2	"	9 50	

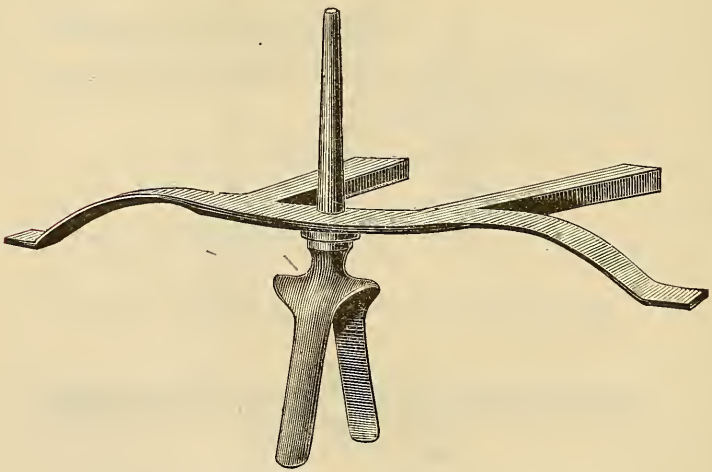
PERCH AND BED PLATES.



No. 3. Single Perch Plate and King Bolt.

FOR FIFTH WHEELS.	PRICE PER SET.
12, 13, 14, 15, 16 in. Diameter	$1 00

In ordering always give the diameter of Fifth Wheel wanted for.



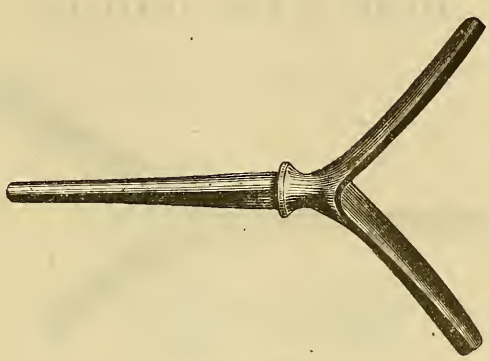
No 4. Double Perch Plate and King Bolt.

FOR FIFTH WHEELS.	PRICE PER SET.
12, 13, 14, 15, 16 in. Diameter	$1 25

In ordering always give the diameter of Fifth Wheel wanted for.

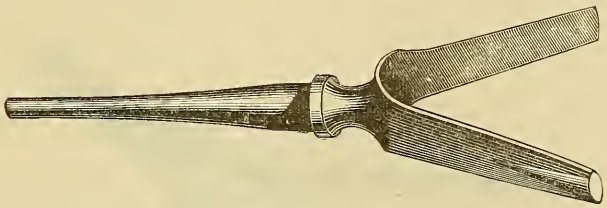
Above are put together ready for use.

CLIP KING BOLTS.



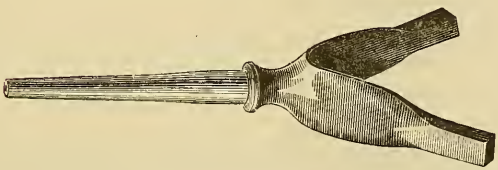
Plain Pattern.

No. 1.	½	in. Bolt for Light Buggies	$2 75	per dozen.
2.	9/16	" " Ordinary "	2 75	"
3.	⅝	" " Heavy Wagons	3 40	"



New Pattern, 1876.

No. 1.	½	in. Bolt for Light Buggies	$3 50	per dozen.
2.	9/16	" " Ordinary "	3 50	"
3.	⅝	" " Heavy Wagons	4 25	"

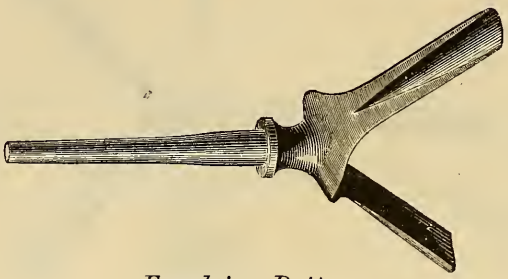


Straight Pattern.

No. 1.	½	in. Bolt for Light Buggies	$4 00	per dozen.
2.	9/16	" " Ordinary "	4 00	"
3.	⅝	" " Heavy Wagons	5 00	"

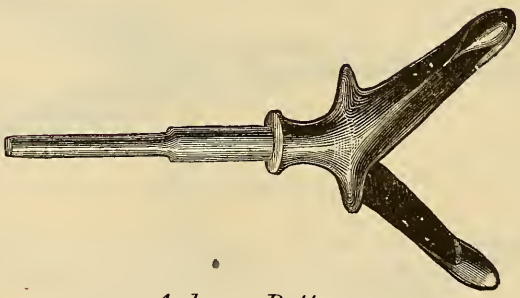
Above are forged from best Norway Iron, and finely finished ready for use.

CLIP KING BOLTS.



Excelsior Pattern.

No. 1.	½ in.	Bolt for light buggies	$4 00	per dozen.
2.	9/16 "	ordinary "	4 00	"
3.	⅝ "	heavy wagons	5 00	"



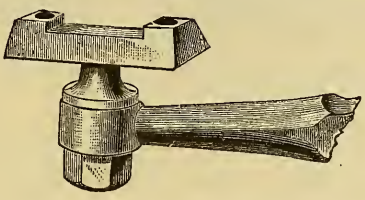
Auburn Pattern.

No. 1.	½ in.	Bolt for light buggies	$4 00	per dozen.
2.	9/16 "	ordinary "	4 00	"
3.	⅝ "	heavy work	5 00	"
4.	"	extra heavy work		

The Auburn Pattern is made to fit the Auburn Pattern Perch and Bed Plate, having an improvement in the method of forging them, which does not require the iron to be upset at the forks in order to leave sufficient stock to form the flanges. From the collar they are forged straight, and will fit a straight hole through the head block and perch plate; and in case of wear between the nut and spring, cannot get loose like King Bolts drawn to a true taper.

Both patterns above are finely finished ready for use.

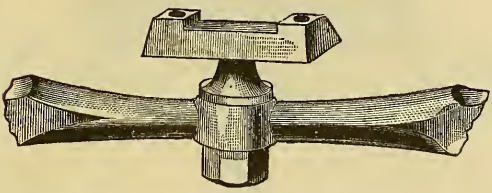
CLIP KING BOLT YOKE AND BRACE.



Auburn Pattern, Single Brace.

FINISHED FOR AXLES.	PRICE PER DOZ.
⅞, 1, 1⅛, 1¼, 1⅜, 1½ in. Bed	$5 50

Packed in Boxes of 2 Doz. each.



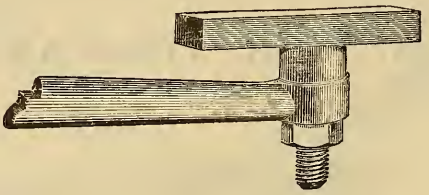
Auburn Pattern, Double Brace.

FINISHED FOR AXLES.	PRICE PER DOZ.
⅞, 1, 1⅛, 1¼, 1⅜, 1½ in. Bed	$6 50

Packed in Boxes of 2 Doz. each.

The above Clip Yokes are forged from best Norway iron, are finished in first-class style, the Clip or Yoke being ground to a smooth surface, and perfectly true, the holes being drilled so that the clips of the King Bolt will make a perfectly close fit to the Axle, the eye of the Brace and the Bolt being milled perfectly true and accurate. One goes with every carriage that uses a King Bolt.

CLIP KING BOLT YOKE AND BRACE.



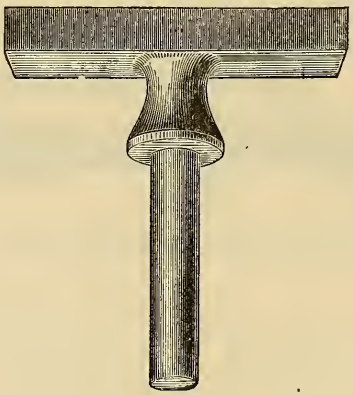
Ordinary Pattern, with Brace.

Price per Dozen $4 50

Packed in Boxes of 4 Doz. each.

The eye on the Brace and Bolt is milled to an accurate fit. To make one size answer for all sizes of axles, the holes are not drilled, but left for the carriage-maker to drill of such size and distance as his work would require.

CLIP KING BOLT YOKE.

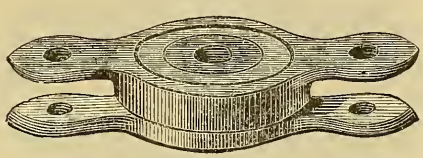


Price per Dozen $2 50

Packed in Boxes of 4 Doz. each.

These Yokes are forged from one solid piece of the best Norway iron, with the Bolt and Collar of the same uniform and smooth finish that our Clip King Bolts have. The Bolt part, on which the perch brace turns, is $\frac{7}{16}$ in. diameter. To make one size answer for all axles, the holes are not drilled, but left for the carriage-maker to drill of such size and distance as his work would require.

WHIFFLETREE PLATES.

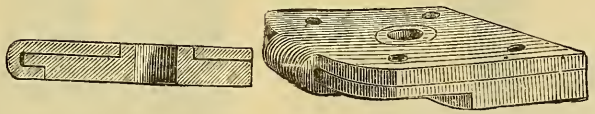


Clark's Patent.

	PRICE PER DOZ.
No. 2, for Light Buggies	$3 00
3, for Heavier Carriages	3 50

The upper and bottom Plates are of Malleable Iron, and the Ring, on which most of the wear comes, is of Wrought Iron. The Plates are made with a broad, plain bearing surface, and so formed that the wear does not come on the Bolt. The three pieces, when riveted together, as shown in the cut, form a safe and most desirable anti-rattling Plate.

Packed in Boxes of 4 Doz. each.



Brewster & Co's Patent.

Made of Wrought Iron.

	PRICE PER DOZ.
No. 1, for Light Buggies	$3 00
2, for Heavier Carriages	3 50

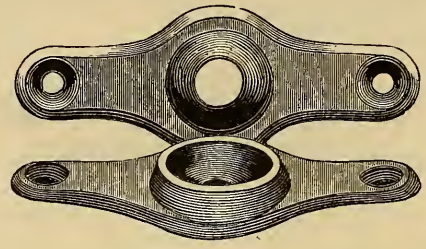
The top Plate is screwed to the Whiffletree, with its hook projecting toward the carriage. The bottom Plate is screwed to the Cross-Bar, with its flange toward the carriage.

The bottom Plate, which was formerly made of Malleable Iron, is now forged, making the whole Whiffletree Plate of Wrought Iron. The thickness of both plates has been increased, and the hook on the top plate extended further under the bottom one than formerly.

They are fitted and finished up in a superior manner, and although always popular, are now liked still better.

Packed in Boxes of 4 Doz. each.

WHIFFLETREE PLATES.

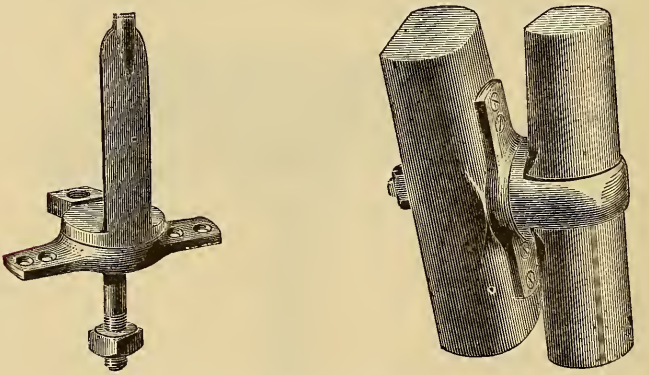


Miller's Patent.

No. 1, for Light Buggies ..... $3 00 per doz.

This Plate is made of Wrought Iron, with a Convex Ball on the upper plate, and a Concave Socket on the under plate, the Bolt passing through the center, fitting accurately together, making it perfectly anti-rattling.

Packed in Boxes of 2 Doz. each.



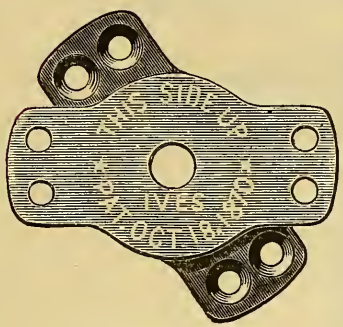
Wilcox's Patent.

Used for Light or Heavy Carriages ..... $6 75 per doz.

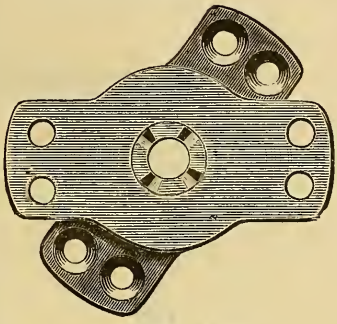
The Top Plate combines the Plate, Bolt and Clip, is made from one piece of Norway iron, and the plates are set in one another so that the strain is taken off of the bolt. It does away with the great objection carriage-makers have, that is, the necessity of making a hole through the Whiffletree in order to connect it with the Cross-Bar, as shown in the cut.

They are put in the market like the left-hand figure, so that the blacksmith can draw the bolt end of Clip to suit his work. The bottom Plate is made of Malleable Iron, but can be furnished of Wrought Iron, if desired, at 50 cents per dozen extra.

WHIFFLETREE PLATES.



UPPER SIDE.

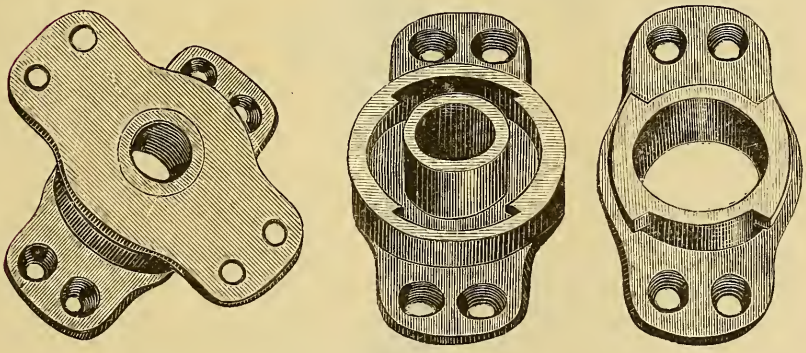


UNDER SIDE.

Ives' Pattern.

No. 1,	1½ in. across the Center	$0 80	per doz.
2,	1¾ " "	0 90	"
3,	2 " "	1 00	"

Packed in Boxes of 2 Doz. each.



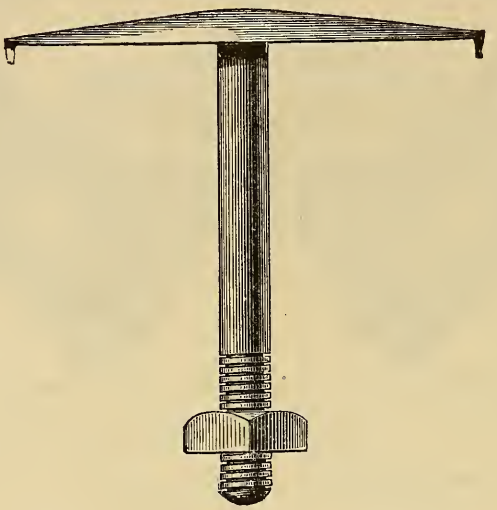
B. S. Porter's Patent.

No. 1.....$3 50 per doz.

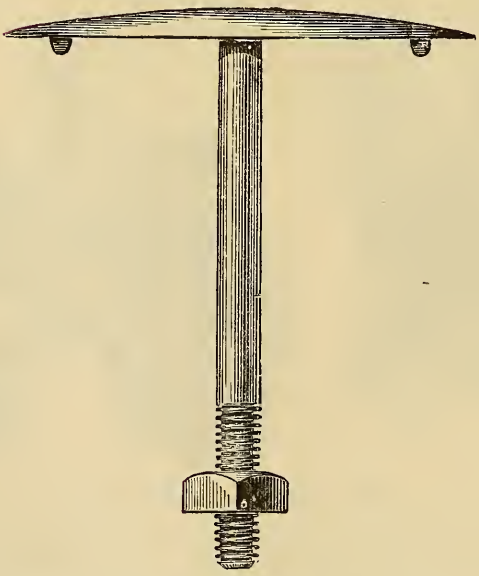
The above Plate is a new device, and will undoubtedly supersede all others. In order to take them apart they must be turned at right angles to each other, and the strain upon the Bolt is comparatively nothing. Are finished in good style.

Packed in Boxes of 2 Doz. each.

WHIFFLETREE BOLTS.



Half Oval, with Spurs at Points.



Half Oval, with Spurs set Back of Points.

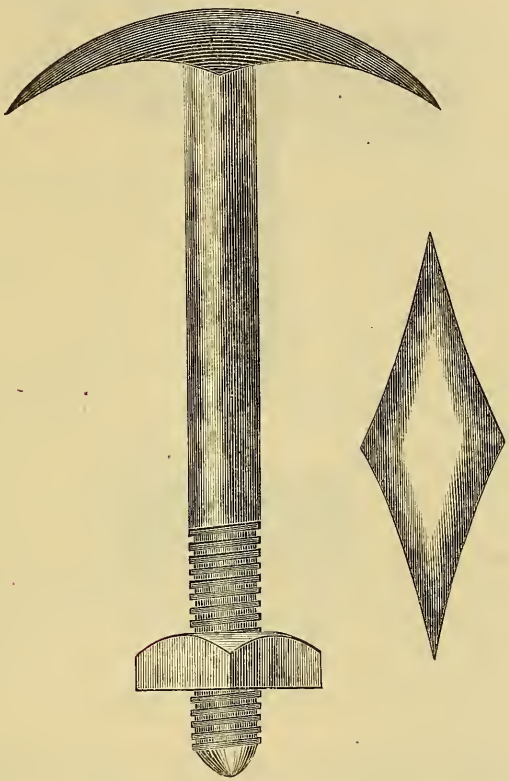
$\frac{5}{16}$ in. Diameter, 3½ and 4 in. long.....$3 00 per doz.

$\frac{3}{8}$ " 3½, 4 and 4½ in. long ..... 3 00 "

Are made of Norway iron, and well finished.

Packed in Boxes of 4 Doz. each.

WHIFFLETREE BOLTS.



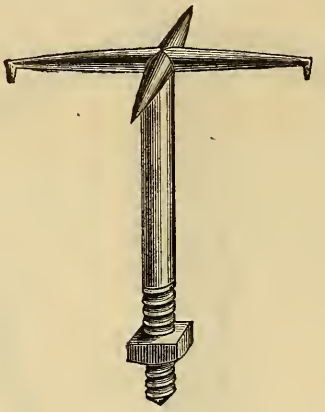
Improved Pattern.

$\frac{5}{16} \times 3$, $3\frac{1}{2}$ and 4 in. long ..... $1 50 per dozen.
$\frac{3}{8} \times 3$, $3\frac{1}{2}$ " 4 " ..... 1 75 "

The above Bolt is made of the best Norway Iron. It is put in crosswise of the Whiffletree, and when the points are closed down on to the wood it forms a band which binds and prevents splitting at the bolt hole, the weakest part of the wood, and makes a very fine finish.

Packed in Boxes of 2 Doz. each.

WHIFFLETREE BOLTS.

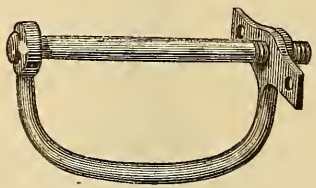


Star Pattern.

$\frac{5}{16}$ in. diameter, $3\frac{1}{2}$ and 4 in. long	$3 00	per dozen.
$\frac{3}{8}$ " $3\frac{1}{2}$ " 4 "	3 00	"

Above are made of Norway Iron, beside having the two arms with points to fasten into the wood. It has two arms for wrapping around the whiffletree crosswise, which prevents splitting and strengthens it at its weakest place, making a very superior Bolt for this purpose.

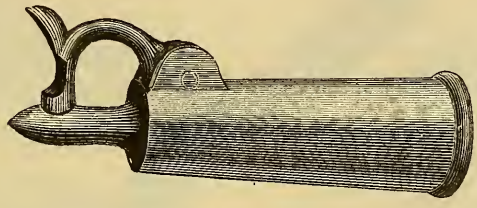
WHIFFLETREE BRACE AND BOLT.



Light, $\frac{5}{16}$ in.	$6 00	per dozen.
Heavy, $\frac{3}{8}$	6 00	"

The above makes a very secure connection, and is fast coming into general use. In ordering give the thickness of Cross-bar and Whiffletree.

WHIFFLETREE HOOKS.

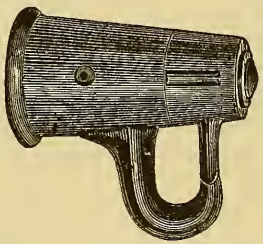


Grigg's Patent.

Nos.	1	2	3	4	5	6	
Sizes	⅞	1	1⅛	1¼	1⅜	1½	in. inside.
Plain	$6 00	7 00	8 00	9 00	9 50	10 00	per dozen pairs.
Japanned	7 00	8 00	9 00	10 00	10 50	11 00	" "

Packed in Packages of 6 pairs each.

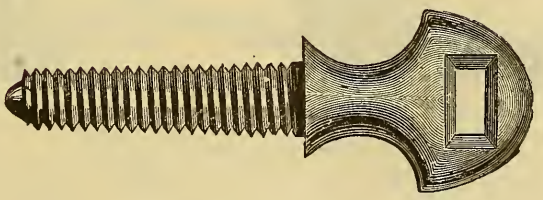
The above is a very useful improvement, being simple in construction, and perfectly secure, and is not liable to freeze up or rust, as the spring is entirely concealed.



Premium Whiffletree Hooks.

Nos.	1	2	3	4	5	6	
Sizes	⅞	1	1⅛	1¼	1⅜	1½	
Price	$5 00	5 00	5 75	6 50	7 50	8 50	per dozen pairs.

Packed in Packages of 6 Pairs each.



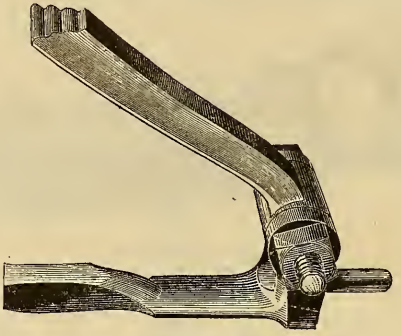
Wrought Iron Cock Eye.

No. 1. Small Size ..... $2 50 per dozen pairs.
2. Large " ..... 2 50 " "

These Cock Eyes are finished in a superior manner, and make a very strong and durable fastening.

Packed in Boxes of 2 Doz. each.

SHAFT COUPLINGS.



Beveled Ears.

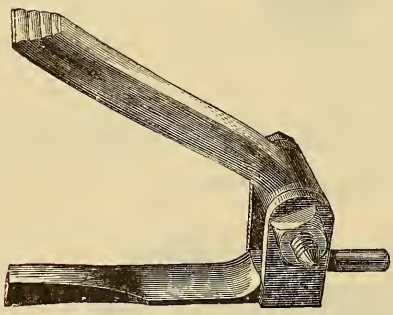
$\frac{7}{16}$ in. Bolt, with Thread in the Ear, finished Black or Bright.

Extra Light,	Eye	⅞ × ¾	in.,	Black	$11 25	Bright	$13 25	per doz.	pairs.
Boston,	"	1 × ¾	"	"	11 25	"	13 25	"	"
New York,	"	1 × ⅞	"	"	11 75	"	13 75	"	"
Baltimore,	"	1⅛ × ⅞	"	"	12 50	"	14 50	"	"
Philadelphia No. 2,	"	1¼ × 1	"	"	14 50	"	16 50	"	"
Philadelphia No. 1,	"	1½ × 1	"	"	17 00	"	19 00	"	"

With Square Bolt in the Ear, $2 00 per doz. pairs extra.

Packed in Boxes of 6 Pairs each.

MADE FOR RUBBER ANTI-RATTLERS.



Straight Ears.

Shaft Eye.

⅜ in. Bolt, without Thread in the Ear.

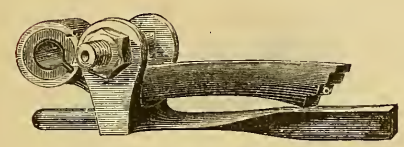
Light,	Eye	1 × ¾	in.	Bright,	$13 25	per doz.	pairs.	
Heavy,	"	1 × ⅞	"	"	13 75	"	"	
Baltimore,	"	1⅛ × ⅞	"	"	14 50	"	"	
Philadelphia,	"	1¼ × 1	"	"	16 50	"	"	

With Square Bolt in the Eye, $2 00 per doz. pairs extra.

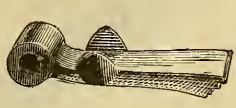
Packed in Boxes of 6 Pairs each.

MADE FOR RUBBER ANTI-RATTLERS.

SHAFT COUPLINGS.



Smith's Patent Noiseless.



Patent Shaft Eye.

Rubber with Steel Lining.

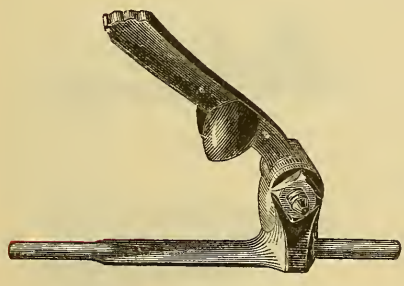
Finished with Wood.

Simplest, most Durable, Anti-Rattling Coupling made.

Extra Light,	Eye ⅞ × ¾ in.	$13 25	per doz. pairs.
Boston "	" 1 × ¾	13 25	" "
New York Heavy,	" 1 × ⅞	13 75	" "
Baltimore,	" 1⅛ × ⅞	14 50	" "
Philadelphia No. 2,	" 1¼ × 1	16 50	" "

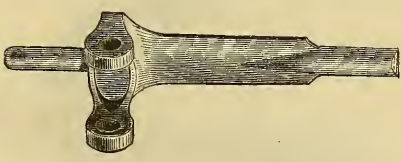
With Square Bolt in the Ear, $2 00 per doz. pairs extra.
Steel Lined Rubbers..... 3 00 " "

Finely Milled Inside and Outside.



Central Park Pattern.

Rubber.



Shackle Part.

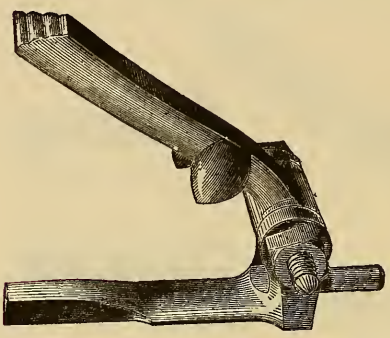
1 in. Light,	Milled	$18 00	per doz. pairs.
1 Heavy,	"	19 00	" "
1⅛ "	"	22 00	" "

With Square Bolt in the Ear, $2 00 per doz. pairs extra.

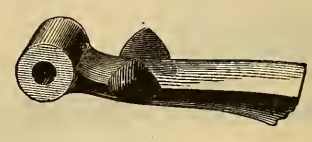
1 in. Central Park Shaft Rubbers	$1 50	per doz. pairs.
1⅛ " "	1 75	" "

Packed in Boxes of 6 Pairs each.

SHAFT COUPLINGS.



Beveled Ears.



Patent Shaft Eye.

Finished with Wood.

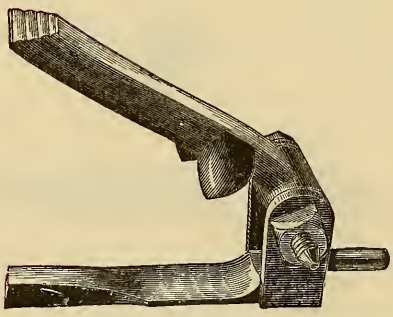
Finely Milled Inside and Outside.

					PER DOZ. PAIRS.
Extra Light,	Bright	Eye	⅞ in.	× ¾ in.	$13 25
Boston "	"	"	1	× ¾	13 25
New York Heavy,	"	"	1	× ⅞	13 75
Baltimore,	"	"	1⅛	× ⅞	14 50
Philadelphia No. 2,	"	"	1¼	× 1	16 50
" No. 1,	"	"	1½	× 1	19 00

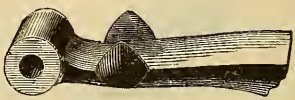
With Square Bolt in the Ear, $2 00 per doz. pairs extra.

Made for Rubber Anti-Rattlers. *Patent 1871 Pattern.*

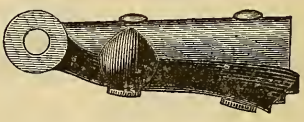
Packed in Boxes of 6 Pairs each.



Straight Ears.



Patent Shaft Eye.



Finished with Wood.

⅜ in. Bolt, without Thread in the Ear.

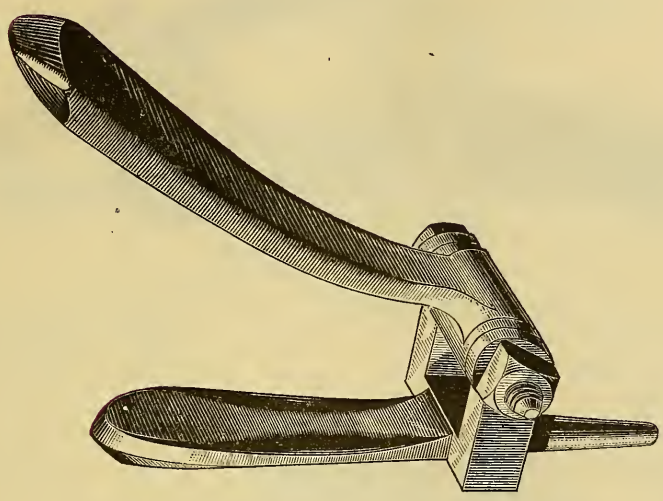
					PER DOZ. PAIRS.
1 in Light,	Bright	Eye	1 in.	× ¾ in.	$13 25
1 Heavy,	"	"	1	× ⅞	13 75
Baltimore,	"	"	1⅛	× ⅞	14 50
Philadelphia,	"	"	1¼	× 1	16 50

With Square Bolt in the Ear, $2 00 per doz. pairs extra.

Made for Rubber Anti-Rattlers. *Patent 1871 Pattern.*

Packed in Boxes of 6 Pairs each.

SHAFT COUPLINGS.



City Pattern, with Spaces for Rubber.

Portland,	or	⅞ in.	Light Pattern,	⅜ in.	Bolt	----------	$11 25	per dozen pairs.	
Boston,	"	1	"	"	⅜	"	----------	11 25	"	"
New York,	"	1	Heavy	"	7/16	"	----------	11 75	"	"
Baltimore,	"	1⅛	"	"	7/16	"	----------	12 50	"	"
Philadelphia,	"	1¼	"	"	7/16	"	----------	14 50	"	"
Cincinnati,	"	1½	"	"	½	"	----------	17 00	"	"
Chicago,	"	1¾	"	"	½	"	----------	30 00	"	"
St. Louis,	"	2	"	"	½	"	----------	50 00	"	"

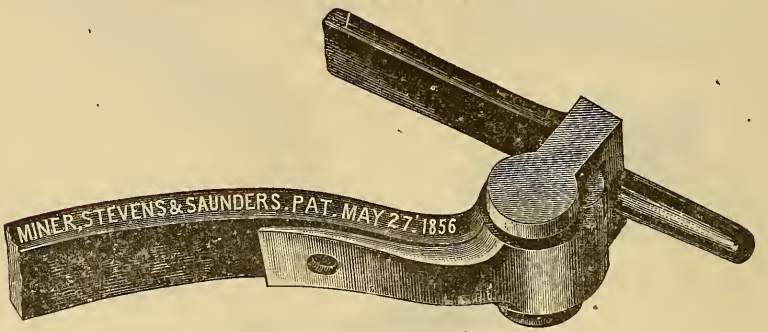
All to screw in the ear unless ordered otherwise. The bolts are milled and shaft eyes drilled to exactly fit the bolts.

Packed in Boxes of 6 Pairs each.

Above is a new Coupling, and each size on the list has been given the name of a city. They are only made in one style of iron finish, which will undoubtedly give them a good reputation and become popular with the consumer. The pattern is similar to the Auburn Coupling, and quality guaranteed equal if not superior to all others.

SHAFT AND POLE COUPLING.

IMPROVED PATTERN OF 1875.



Saunders' Patent.

MADE ENTIRELY OF NORWAY IRON.

		SHAFT.	POLE.	
No. 0.	Extra Light Work	$1 75	$1 25	per pair.
1.	Usual " "	1 75	1 25	"
2.	Medium	2 00	1 25	"
3.	Heavy	2 25	1 50	"

Pole Eyes made to fit same as Shaft Eyes.

Packed in Boxes of 6 Pairs each.

This Coupling as now made is, without doubt, a very reliable and perfect Coupling. Its long use, by the most reliable carriage trade at the East, is conclusive of its great merit. This Coupling is made of Norway iron only, having lately altered the pattern so that the hinged part, when attached to the shafts, is easily changed to a pole, as desired — more room being given for the shafts to enter between the rivet and the clip against the side. The bolt is riveted in on one ear, being formed to fill a square hole punched in the ear, making it impossible for the bolt to turn or get loose.

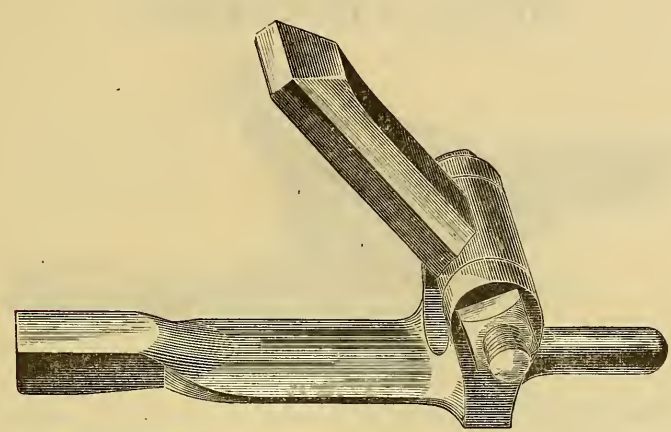
The pattern of 1875 is a great improvement on any previously made.

RUBBER TUBING FOR SAUNDERS' SHACKLES.

Made expressly for this purpose, of good Rubber.

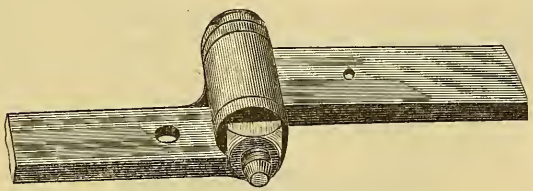
Price, per foot $0 35

SHAFT COUPLINGS.



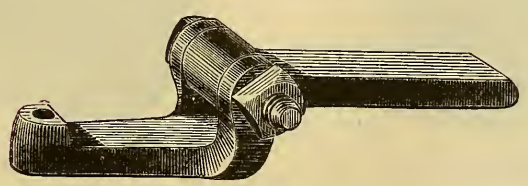
Extra Heavy Wagon Coupling.

Chicago, 1¾ in. Eye ..... $30 00 per doz. pairs.
St. Louis, 2 " ..... 50 00 " "



Plain Pattern.

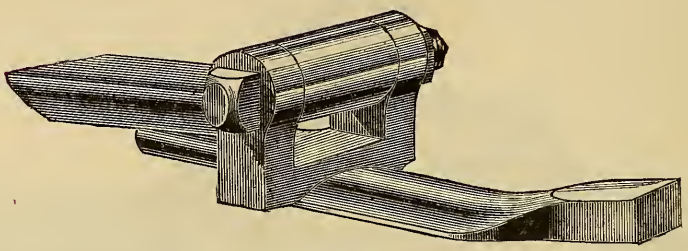
1 × ⅞	in. Eye,	Black	$8 75	Bright	$10 50	per doz.	pairs.
1 × 1	"	"	9 50	"	11 25	"	"
1⅛ × 1	"	"	10 50	"	12 25	"	"
1¼ × 1⅛	"	"	13 50	"	15 25	"	"
1½ × 1⅛	"	"	16 00	"	18 00	"	"



Clip Bar Pattern.

1⅛ × 1	in. Eye,	Black	$10 50	Bright	$12 25	per doz.	pairs.
1¼ × 1	"	"	12 00	"	14 00	"	"

SHAFT COUPLINGS.



Half Bright.

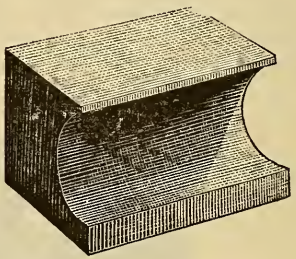
⅞ in.	Width of Eye	$12 00	per dozen pairs.
1	" "	12 00	" "
1⅛	" "	13 00	" "
1¼	" "	15 00	" "
1½	" "	18 00	" "

These Couplings are milled to surface on the upper side, and answer every purpose of a full-bright Coupling. All styles of Couplings can be furnished milled in this way at a trifling expense above the cost of the ordinary black Coupling.

Packed in Boxes of 6 Pairs each.

SHAFT RUBBERS.

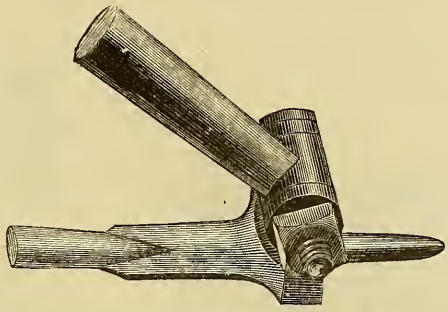
Central Park.



Common.

Central Park Rubbers	$1 75	per dozen pairs.
Common Rubbers	0 75	" "

POLE COUPLINGS.



$\frac{7}{16}$ in. Bolt, with Thread in the Ear.

Light Pattern,	Eye,	$\frac{7}{8} \times \frac{3}{4}$	in., Black,	$11 25	Bright,	13 25	per doz.	pairs.
New York,	"	1 × $\frac{7}{8}$	"	11 75	"	13 75	"	"
Baltimore,	"	$1\frac{1}{8} \times \frac{7}{8}$	"	12 50	"	14 50	"	"
Philadelphia No. 2,	"	$1\frac{1}{4} \times 1$	"	14 50	"	16 50	"	"
Philadelphia No. 1,	"	$1\frac{1}{2} \times 1$	"	17 00	"	19 00	"	"

With Square Bolt in the Eye, $2 00 per doz. pairs extra.

Packed in Boxes of 6 Pairs each.

POLE EYES.

Plain Pole Eye.

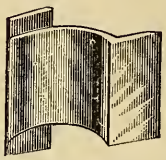
1 in. Eye	Black,	$4 50	Bright,	$5 50	per doz.	pairs.	
$1\frac{1}{8}$ "	"	5 50	"	6 50	"	"	
$1\frac{1}{4}$ "	"	6 50	"	7 50	"	"	
$1\frac{1}{2}$ "	"	8 00	"	9 00	"	"	

Reversible Pole Eye.

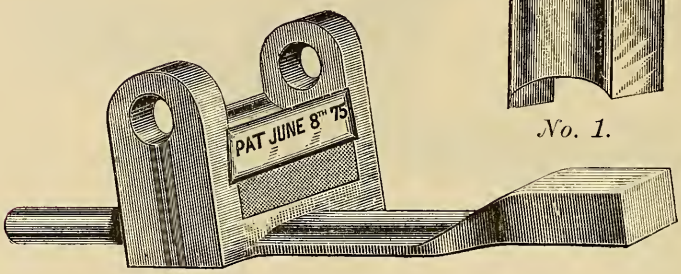
$\frac{7}{8}$ in. Eye	Black,	$5 00	Milled,	$6 00	per doz.	pairs.	
1 "	"	6 50	"	7 50	"	"	
$1\frac{1}{8}$ "	"	6 50	"	7 50	"	"	
$1\frac{1}{4}$ "	"	8 00	"	9 00	"	"	

Packed in Boxes of 6 Pairs each.

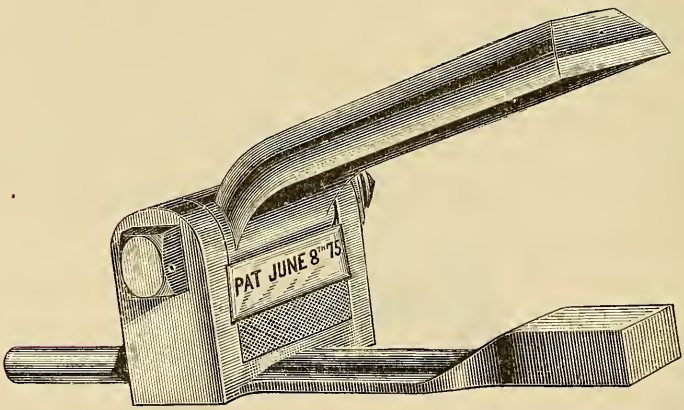
SHAFT COUPLING ANTI-RATTLER.



No. 1.



No. 2.



No. 3.

Price per single pair	$0 35
" " dozen "	3 50
" " gross	36 00

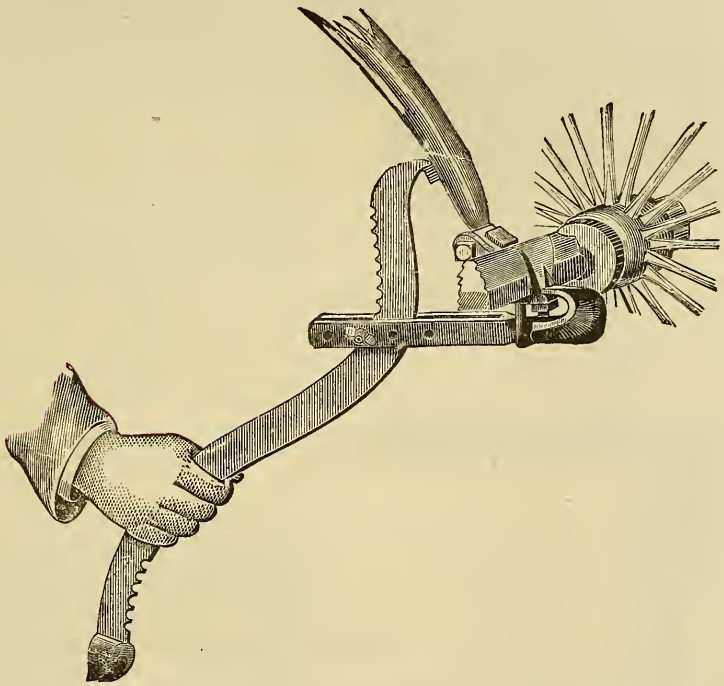
The above is a new article to prevent rattling in Carriage Shaft Couplings. The Collar, Fig. 1, is made of brass, so formed to hold the Gum in place as shown in Fig. 2; and being milled to fit the eye, as shown in Fig. 3, makes a perfect fit and finish to the Shackle. The brass and iron coming together, the friction is very slight, and the Gum being entirely protected will not need renewing.

They are put up in Boxes of 12 Pairs each, to fit either the Straight or Beveled Ear Patterns, from $\frac{7}{8}$ in. to $1\frac{1}{4}$ in.

STONE'S PATENT

SHAFT AND POLE SHACKLE JACK.

PATENTED JANUARY 12, 1875.



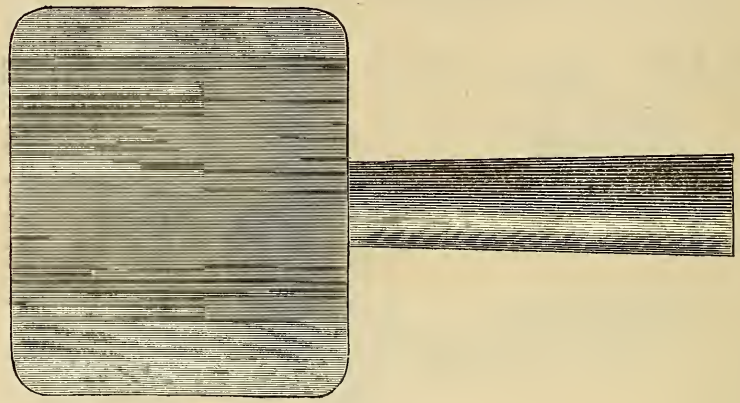
Price..... $21 00 per dozen.

The application of this valuable invention is shown in the above cut, from which it will be seen that when in use the Hook catches upon the Clip Yoke or Bar behind the axle, the arms or prongs of the Hook striking beneath the axle; when in this position the lever grapples the shaft either on the shoulder of the shaft eye, on the shaft iron itself, or upon the surest grappling point, the nut of the first bolt securing the wood to the shaft iron, as shown in the cut. This furnishes a leverage which easily compresses the rubber so as to allow the shaft bolt to be put in and avoids the danger of stripping off the thread.

The notched end is intended for use with Poles, though it may be used on shafts when there is a shoulder on the shaft eye.

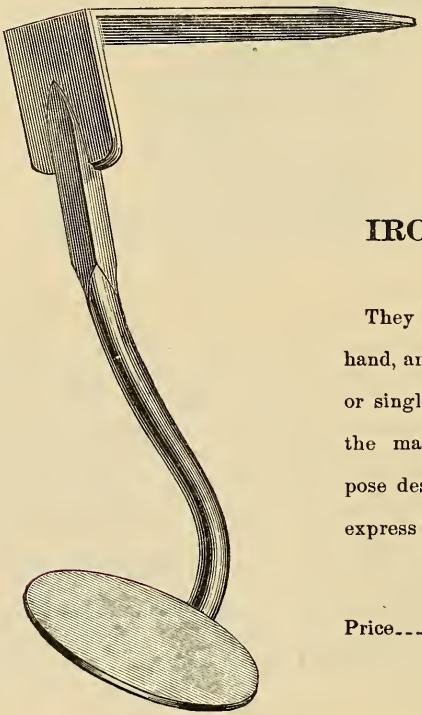
It will be observed that the leverage can be changed by a proper use of the bolt holes in the Hook and the notches on the lever, so that this Jack can be used with any style or shape of shaft, it being the most readily adjusted of any Shackle Jack in use. It is simple, durable, and effective.

SOLID STEP PADS.



Best Refined Iron.

No. 1.	Pad, 2¾ × 3 in	$4 50	per dozen pairs.	
2.	" 3¼ × 3¼	4 50	"	"
3.	" 3 × 3½	4 50	"	"
4.	" 3¼ × 4	4 50	"	"
5.	" 4 × 4½	4 50	"	"

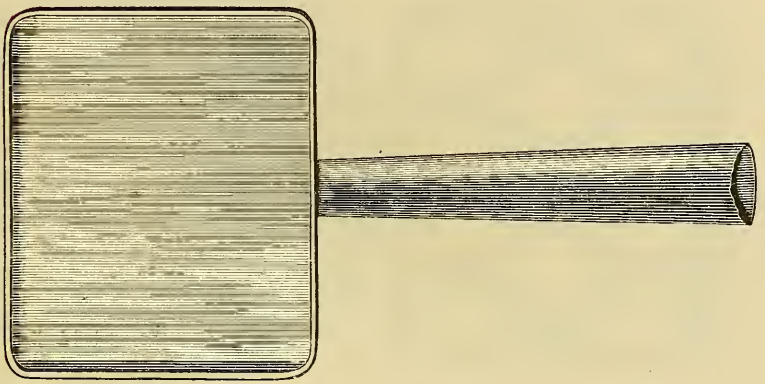


WROUGHT IRON SHAFT STEP.

They are made in pairs, right and left hand, and are sold either by the dozen or single pairs. They are superior to the malleable iron step for the purpose designed. Are used principally on express and truck wagons.

Price..... $15 00 per dozen pairs.

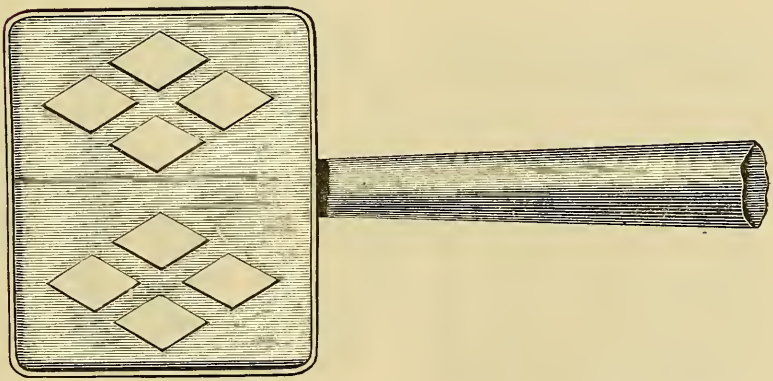
SOLID STEP PADS.



Plain Pattern, with Beaded Edge. Ordinary Finish.

No. 1 Pad, 2⅝ × 3⅜ in. ..... $6 00 per doz. pairs.
2 " 3¼ × 3⅞ ..... 6 00 " "

Forged solid from the best of Norway iron.

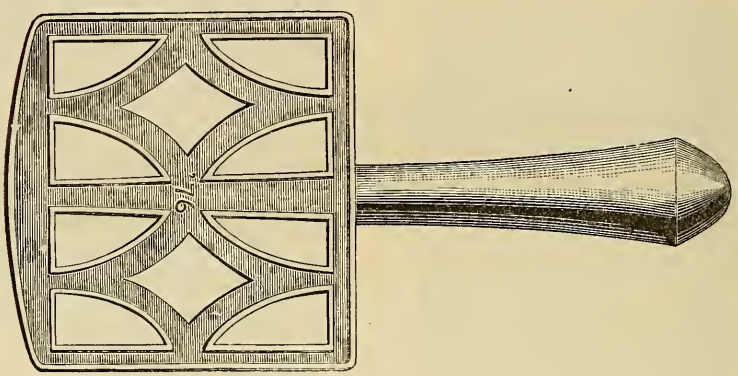


Diamond Pattern, with Beaded Edge. Ordinary Finish.

No. 1 Pad, 2⅝ × 3⅜ in. ..... $6 75 per doz. pairs.
2 " 3¼ × 3⅞ ..... 6 75 " "

Forged solid from the best of Norway iron.

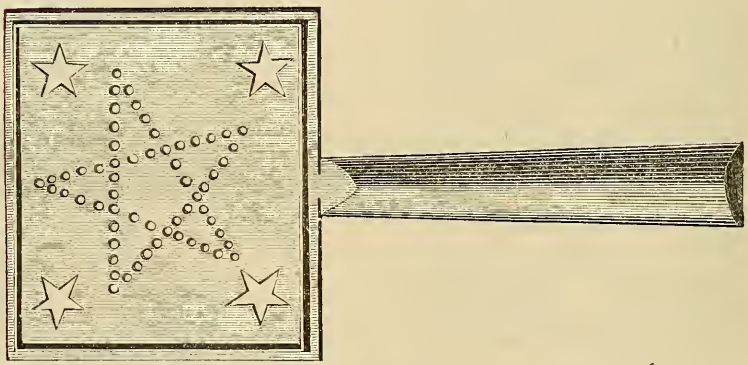
SOLID STEP PADS.



Centennial Pattern.

No. 1. 2⅞ × 3 in. ..... $7 50 per dozen pairs.
2. 3¼ × 3⅜ ..... 7 50 " "
3. 3½ × 4 ..... 9 00 " "

Forged solid from the best of Norway iron.

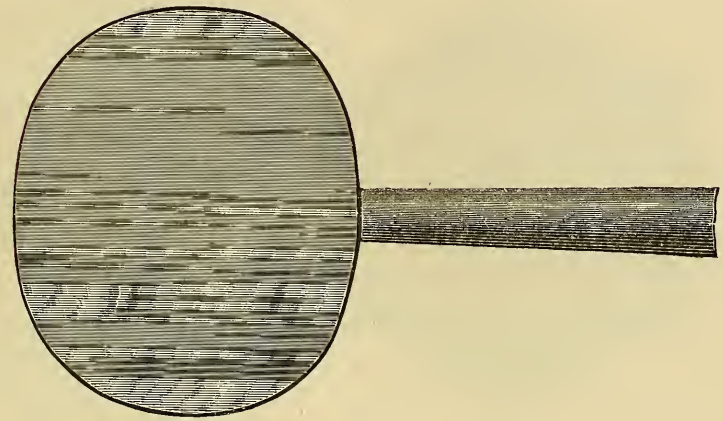


Star Pattern.

No. 1. Pad 3¼ × 3¼ in., plain without open star ..... $ 9 00 per dozen pairs.
2. Pad 3¼ × 3¼ in., with open star as above ..... 10 00 " "

Forged solid from the best of Norway iron.

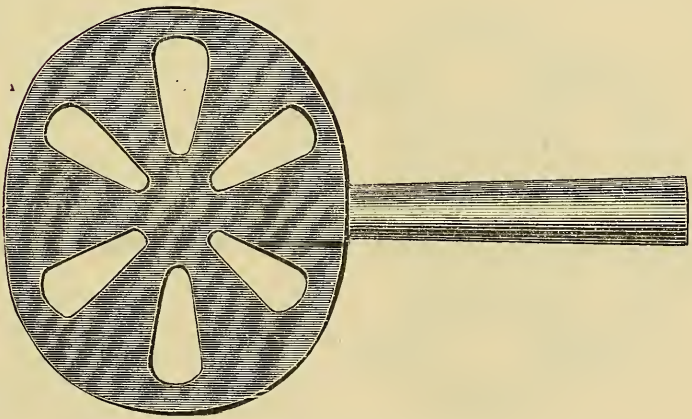
SOLID STEP PADS.



Plain Oval Pattern.

No. 1 Pad, 3 ×3¼ ..... $10 00 per doz. pairs.
2 " 3 ×4 ..... 10 00 " "

Forged solid from the best of Norway iron.

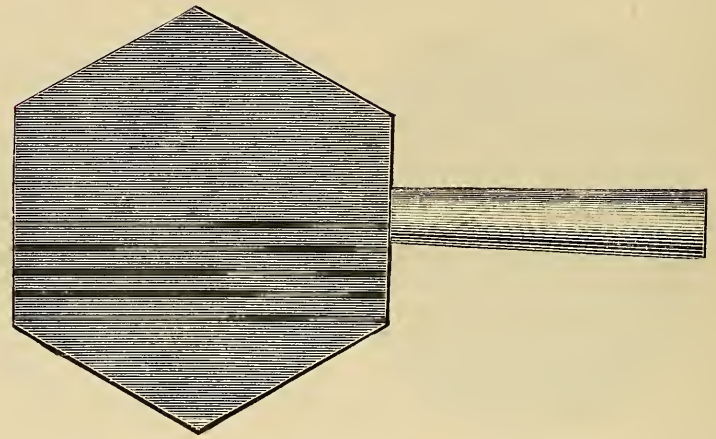


Open Oval Pattern.

No. 1 Pad, 3 ×3¼ in. ..... $10 per doz. pairs.
2 " 3¼ ×4 ..... 10 " "

Forged solid from the best of Norway iron.

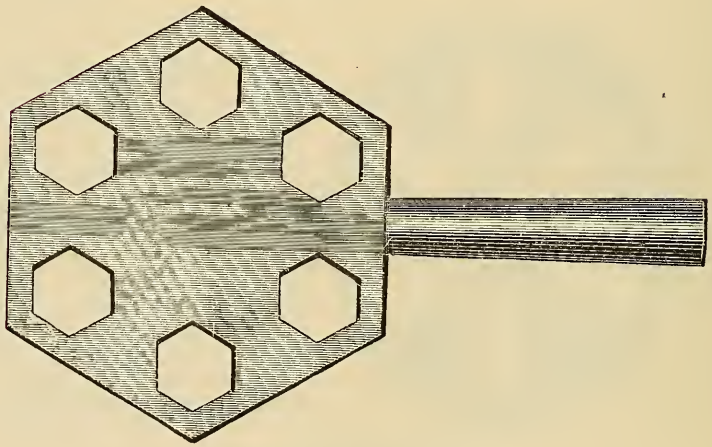
SOLID STEP PADS.



Plain Hexagon Pattern.

No. 1 Pad, 3 ×3¼ in. ..... $10 00 per doz. pairs.
2 " 3¼×4 ..... 10 00 " "

Forged solid from the best of Norway iron.

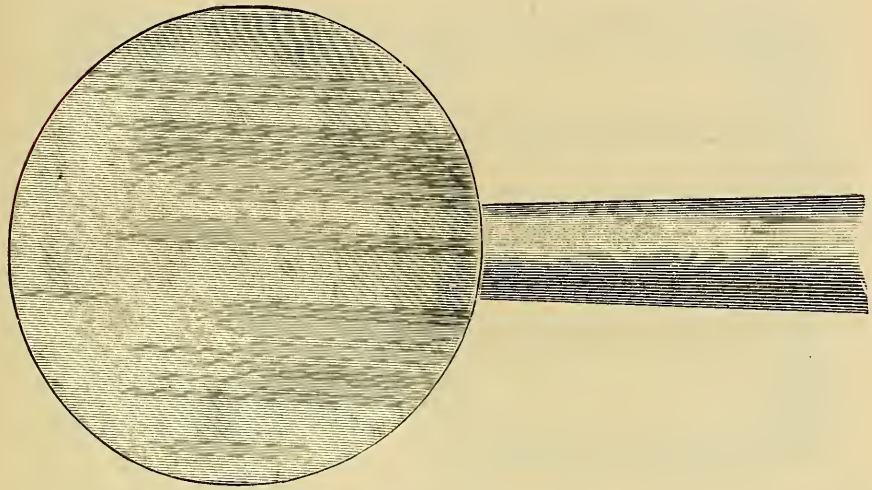


Open Hexagon Pattern.

No. 1 Pad, 3 ×3¼ in. ..... $10 00 per doz. pairs.
2 " 3¼×4 ..... 10 00 " "

Forged solid from the best of Norway iron.

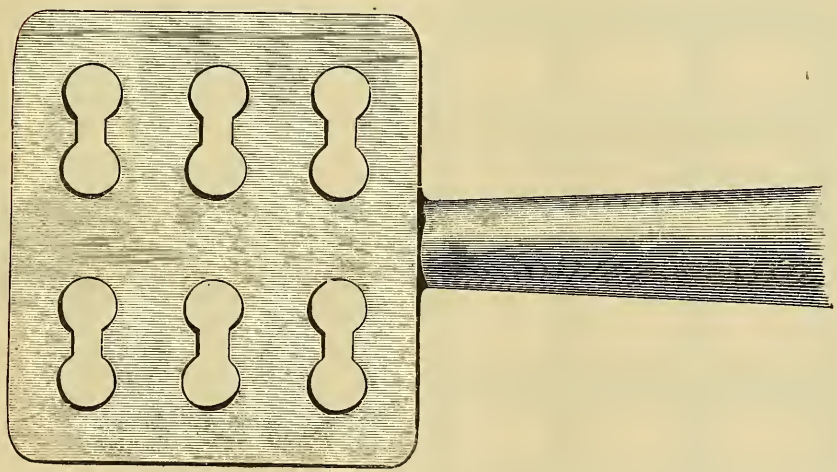
SOLID STEP PADS.



Plain, Round Pattern.

No. 1	Pad, 4 ×4 in.	$10 00	per doz. pairs.
2	" 4½ × 4½	10 00	" "

Forged solid from the best of Norway iron.

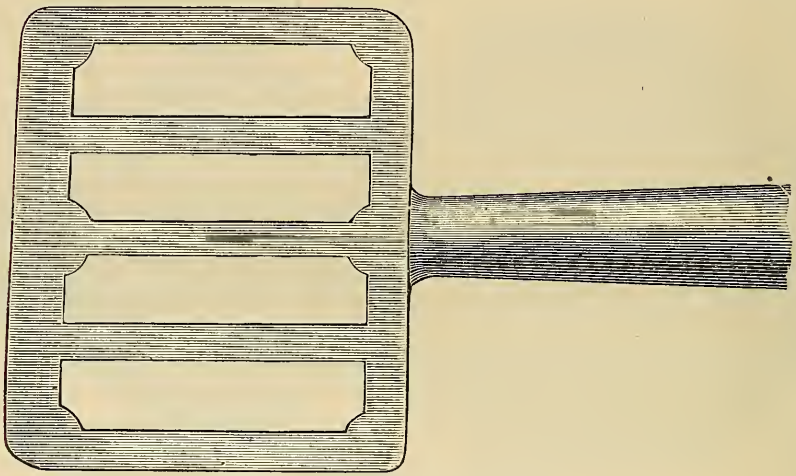


Ball Pattern.

No. 1	Pad, 3 ×3¼ in.	$10 00	per doz. pairs.
2	" 3¼ × 4	10 00	" "
3	" 3¾ × 4¼	12 00	" "

Forged solid from the best of Norway iron.

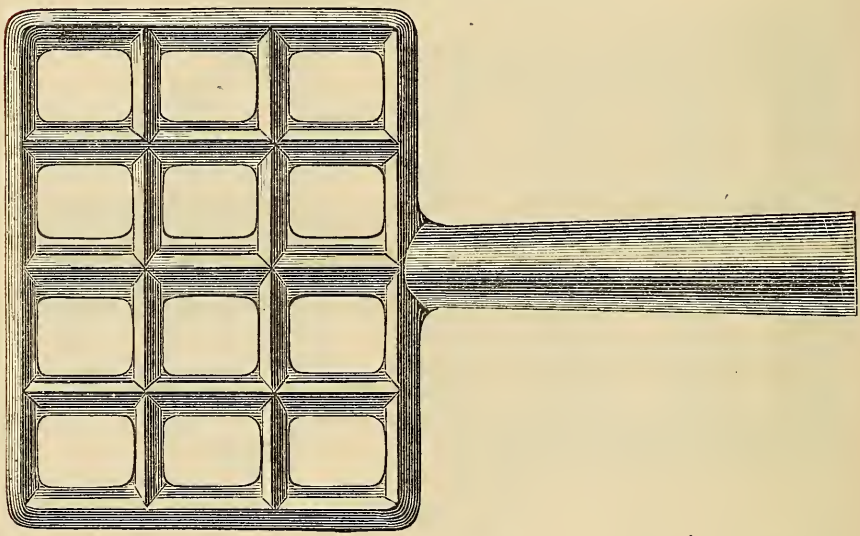
SOLID STEP PADS.



Ribbed, Square Pattern.

No. 1 Pad, 3 ×3¼ in.	$12 00	per doz. pairs.
2 " 3¼×4	12 00	" "
3 " 3¾×4¼	14 00	" "

Forged solid from the best of Norway iron.

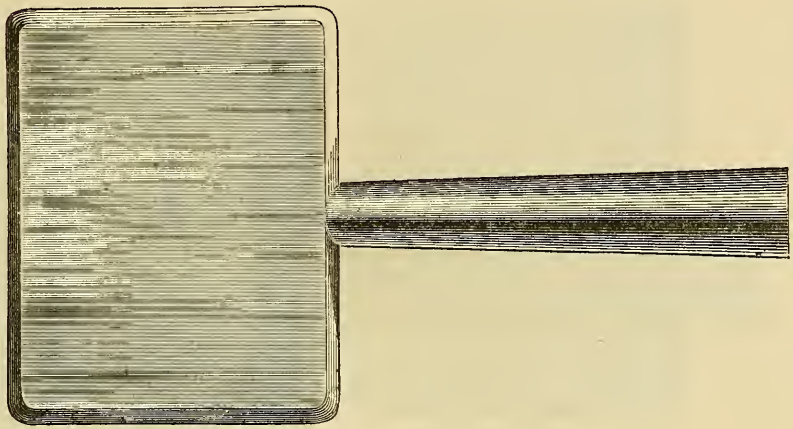


Waffle Pattern.

No. 1 Pad, 3 ×3¼ in.	$12 00	per doz. pairs.
2 " 3¼×4	12 00	" "

Forged solid from the best of Norway iron.

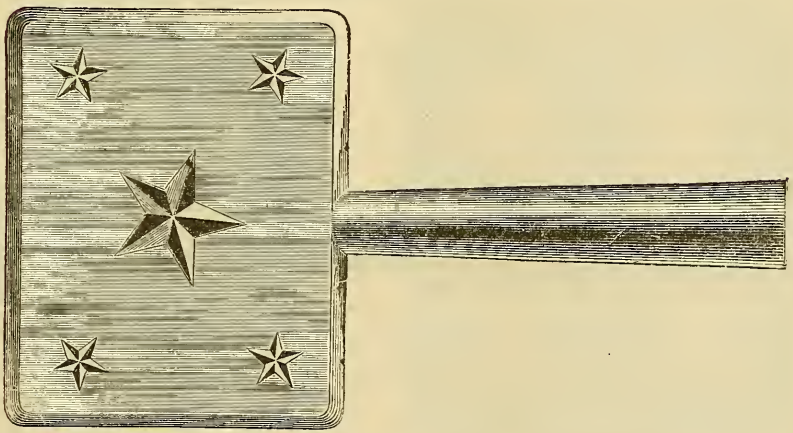
SOLID STEP PADS.



Plain Pattern. Extra Fine Finish.

No. 0 Pad, $2\frac{1}{8} \times 3\frac{1}{4}$ in.	$9 00	per doz.	pairs.
1 " 3 $\times 4$	9 00	"	"
2 " $3\frac{3}{4} \times 4\frac{3}{4}$	11 00	"	"

Each Step Pad is forged solid from one piece of best Norway iron, and will not break down or bend when in use.



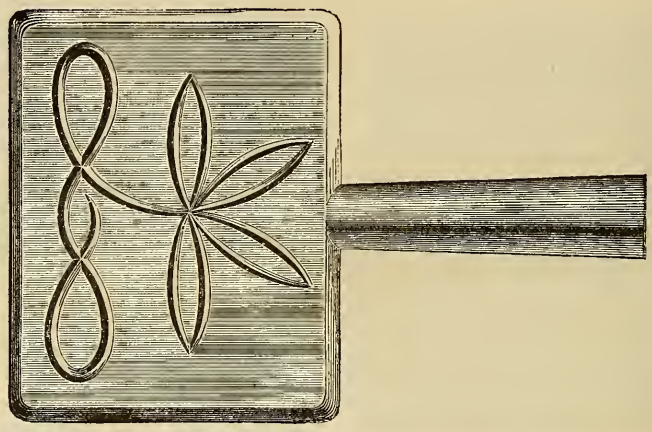
Embossed Star Pattern. Extra Fine Finish.

No. 0 Pad, $2\frac{1}{8} \times 3\frac{1}{4}$ in.	$10 00	per doz.	pairs.
1 " 3 $\times 4$	10 00	"	"
2 " $3\frac{3}{4} \times 4\frac{3}{4}$	12 00	"	"

Forged solid from the best of Norway iron.

Are made with raised figures on the Pad, which form sharp angles, preventing the foot from slipping, and making a neat finish.

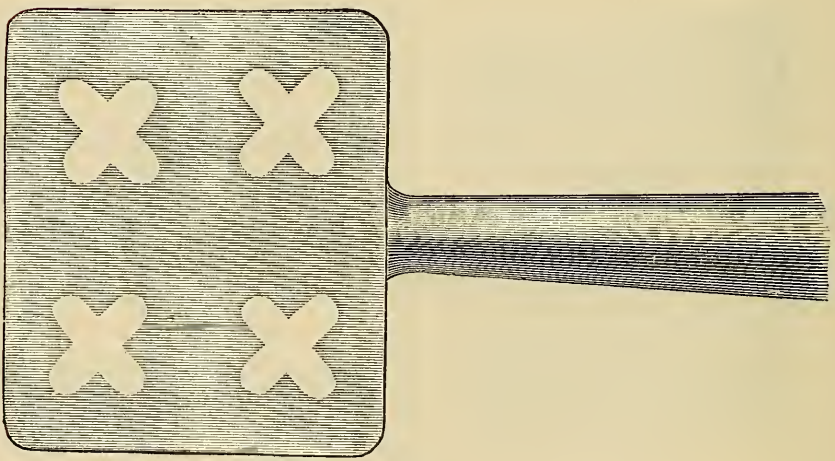
SOLID STEP PADS.



Embossed Leaf Pattern. Extra Fine Finish.

No. 0 Pad, $2\frac{1}{8} \times 3\frac{1}{4}$ in.	$10 00	per doz.	pairs.
1 " 3 $\times 4$	10 00	"	"
2 " $3\frac{3}{4} \times 4\frac{3}{4}$	12 00	"	"

Forged Solid from the best of Norway iron.



"X X" Pattern. Extra Fine Finish.

No. 1 Pad, 3 $\times 3\frac{1}{4}$ in.	$10 00	per doz.	pairs.
2 " $3\frac{1}{4} \times 4$	10 00	"	"
3 " $3\frac{3}{4} \times 4\frac{1}{4}$	12 00	"	"

Forged solid from the best of Norway iron.

SOLID STEP PADS.

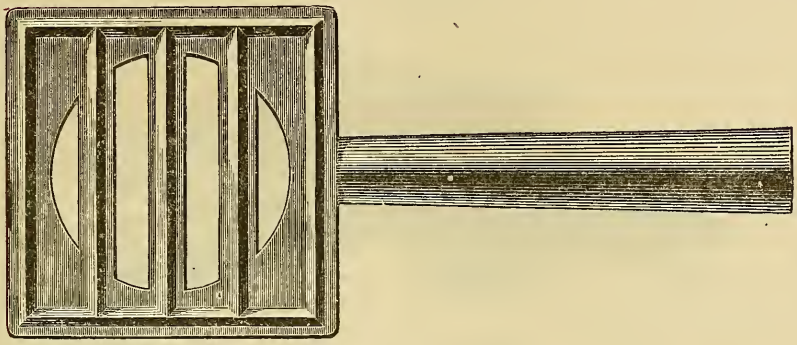


Fig. 1.

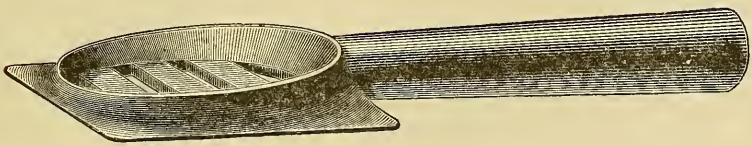


Fig. 2.

Cross-Bar, Open Pattern.

No. 0	Pad, $2\frac{7}{8} \times 3$ in.	$13 00	per doz. pairs.
1	" $3\frac{1}{4} \times 3\frac{3}{8}$	13 00	" "
2	" $3\frac{5}{8} \times 3\frac{3}{4}$	16 00	" "

Made expressly for Fine Light Carriages.

Fig. 1 is a view of the side, on which, when on the carriage, the foot treads, and Fig. 2 the reverse side.

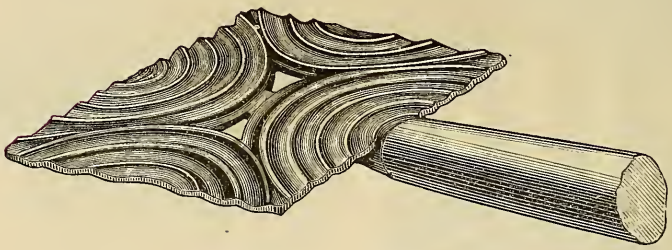
One of the peculiar features of this Step is, that the bars run across the Pad at right angles with the shank, instead of parallel with it, which will better hold the foot in place when stepping on to the Pad than if the bars run lengthwise, and by many is thought of better style.

The upper side, Fig. 1, is finished with sharp angular beads, which also keep the foot from slipping, and add finish to the Step.

As shown in Fig. 2, the Step is supported on the under side by a strong ring, which tapers toward the edges and front, making a light Step, and at the same time one of great strength. They are forged solid from one piece of the best Norway iron, and we offer them as the finest Step known to the trade.

CORRUGATED STEP PADS.

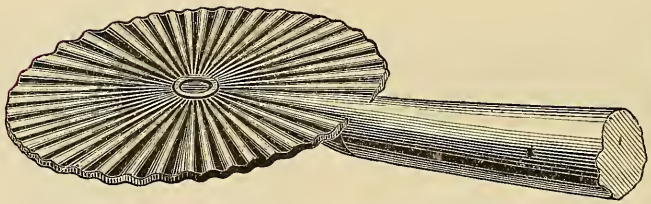
SOLID.



South Park Pattern.

No. 1	Pad, $2\frac{3}{4} \times 3$ in.	$10 00	per doz. pairs.
2	" $3\frac{1}{4} \times 3\frac{1}{4}$	10 00	" "
3	" 3 $\times 3\frac{1}{2}$	10 00	" "
4	" $3\frac{1}{4} \times 4$	10 00	" "
5	" 4 $\times 4\frac{1}{2}$	12 00	" "

Forged solid from the best of Norway iron.



Union Park Pattern.

No. 1	Pad, $3\frac{1}{4}$ in.	$10 00	per doz. pairs.
2	" 4	12 00	" "
3	" $4\frac{1}{2}$	12 00	" "

Forged solid from the best of Norway iron.

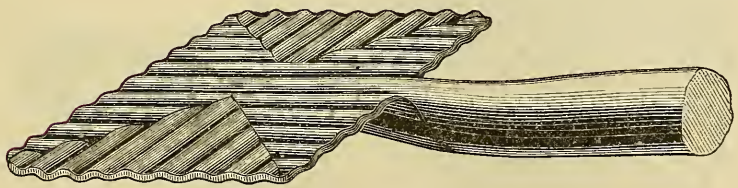
CORRUGATED STEP PADS.

SOLID.

Chicago Pattern.

No. 1	Pad,	2¾ × 3	in.	$10 00	per doz. pairs.
2	"	3¼ × 3¼		10 00	" "
3	"	3 × 3½		10 00	" "
4	"	3¼ × 4		10 00	" "
5	"	4 × 4½		12 00	" "

Forged solid from the best of Norway iron.

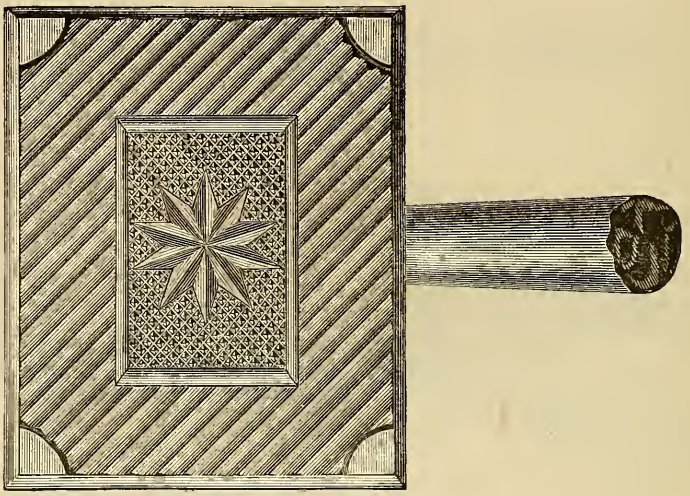


Lincoln Park Pattern.

No. 1	Pad,	2¾ × 3	in.	$10 00	per doz. pairs.
2	"	3¼ × 3¼		10 00	" "
3	"	3 × 3½		10 00	" "
4	"	3¼ × 4		10 00	" "
5	"	4 × 4½		12 00	" "

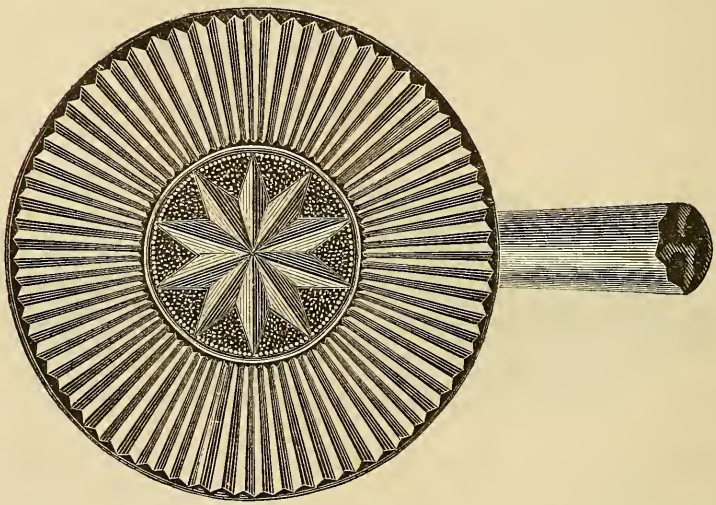
Forged solid from the best of Norway iron.

RUBBER STEP PADS.



Square Star Pattern.

No. 1.	3 ×3½ in. style above, with Shanks	$15 00	per dozen pairs.	
2.	3½ ×4 " " " "	15 00	"	"
3.	4½ ×5 " " " "	20 00	"	"

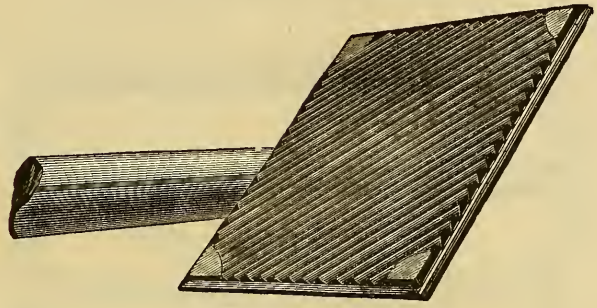


Round Star Pattern.

No. 4.	4 in. diameter, style as above, with Shanks	$15 00	per dozen pairs.	
5.	4½ " " " " "	17 60	"	"
6.	5 " " " " "	17 60	"	"

The advantages of Rubber Steps over common is apparent, as the danger of slipping on entering or leaving a carriage is avoided by its use. Care should be taken not to attach the Pads till the welding to the Shank proper is completed, as the great heat required would injure the gum.

RUBBER STEP PADS.



Plain Pattern.

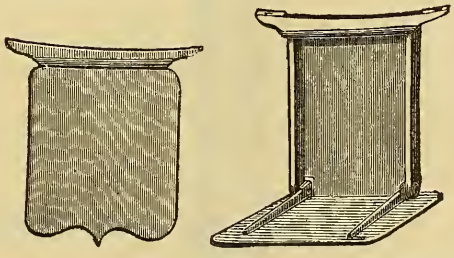
No. 1.	3 × 3½ in., square	with Shanks,	$13 50 per dozen pairs.
2.	3½ × 4 "	"	13 50 " "
3.	4½ × 5 "	"	18 00 " "
4.	4 in. diameter, round	"	13 50 " "
5.	4½ " "	"	16 20 " "
6.	5 " "	"	16 20 " "

Rubber Treads for Book Steps.

Nos.	11	12	13	14	15	16
Sizes,	6 × 8	7 × 8½	6 × 9	6 × 9½	6 × 10	7 × 8
Nos.	17	18	19	20	21	
Sizes,	7 × 8½	7 × 9	7 × 9½	7 × 10	8 × 10	

-- $20 00 per dozen pairs.

COACH STEPS.

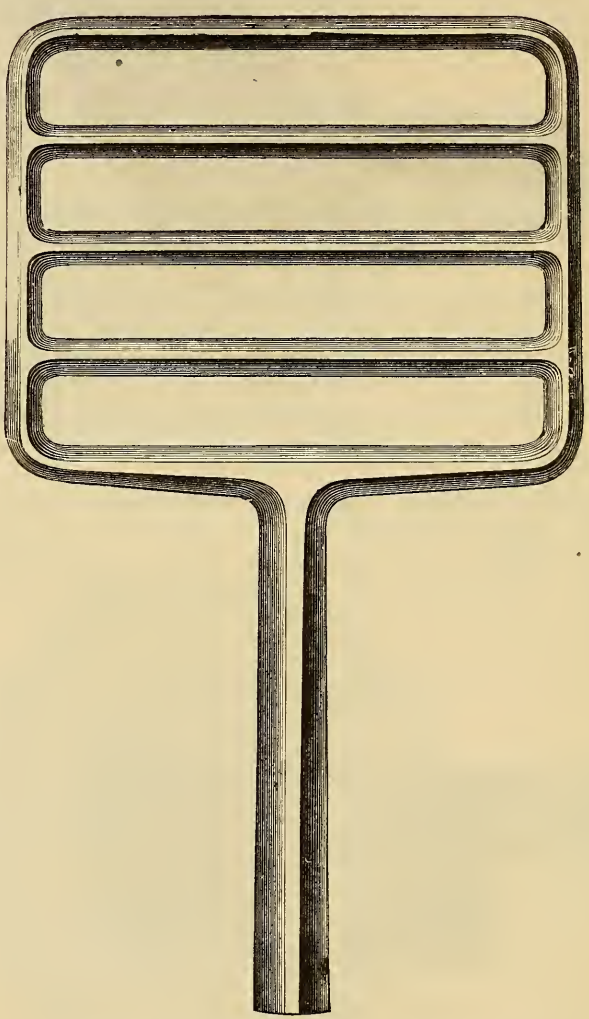


Closed and Open, Single.

Single Steps, Wrought Iron,	with Attachment	$24 00
" " " "	without "	17 00
Double " " "	with "	55 00
" " " "	without "	45 00

When ordering Folding Steps make a drawing of the sweep of Coach Sill; give the height of the Body from the ground: state whether the Hinges used are common coach or concealed hinges; the length of Step, the round and level line of the Body, and if the door is cut through even with the rocker. These points are necessary in order to get the Step to fit the place designed for it.

GRIDIRON COACH STEP.

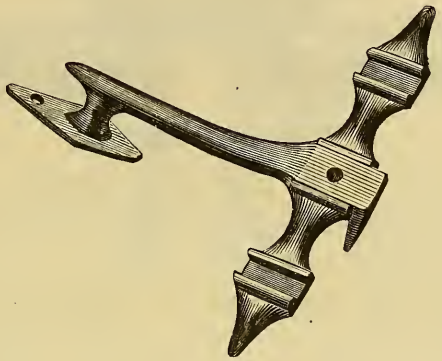


Made of the Best Norway Iron.

No. 1 Step, 6×5 in. ---------- $4 50 per set.
2 " 7×6 ---------- 5 00 "

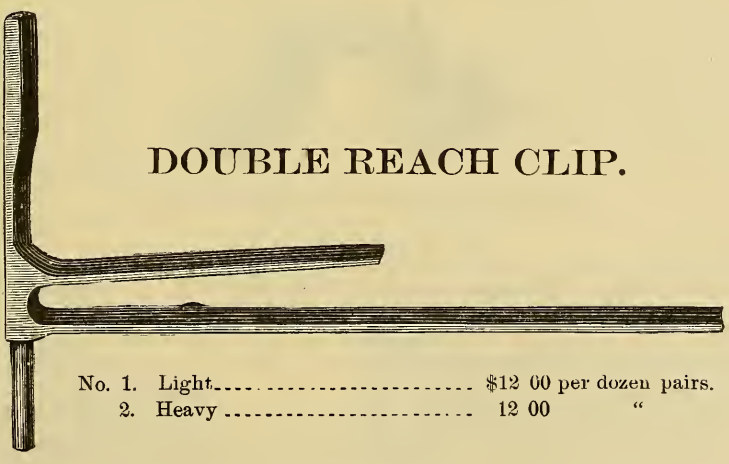
They are made tapering from the back to the front bar, giving a lighter appearance to the front of the Step, and increasing in strength toward the shank.

DEAN'S PATENT
COMBINED CLIP HOLDER AND BRACE.



No. 1. 1¼ in. ..... 15 cents per pound.
2. 1½ ..... 15 "

This combined Plate and Brace is used for fastening on carriage springs, and forming a stronger and lighter connection with the Reach at that point. The Plate set on the under half of the Spring, and being transversely grooved, receives and holds the Clips to their places, the Brace goes to the Reach, and there receives a bolt. The whole is very light, and gives great strength and elegance of finish to the parts.

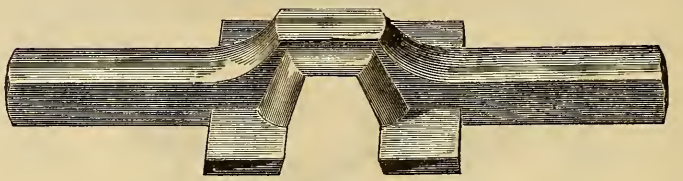


DOUBLE REACH CLIP.

No. 1. Light..... $12 00 per dozen pairs.
2. Heavy ..... 12 00 "

The above Clip is made from one piece of best Norway Iron, and left in the shape as illustrated, so that they can be fitted to the Axle; but in ordering, give diameter of Reach and Axle.

FRENCH COACH CLIP.



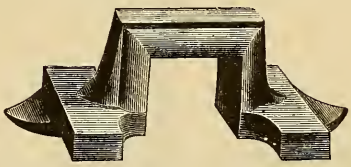
Meeker & Mason's Patent.

Forged solid from one piece of the best Norway iron.

No. 1	For 2	in. Springs	$5 25	per pair.
2	1¾	"	5 00	"
3	1½	"	4 75	"
4	1¼	"	4 50	"

All the Corners of the above forging will be found worked out to sharp, well defined angles. They are designed for Platform Spring work. Are much cheaper than they can be made by hand.

COACH AXLE CLIP.



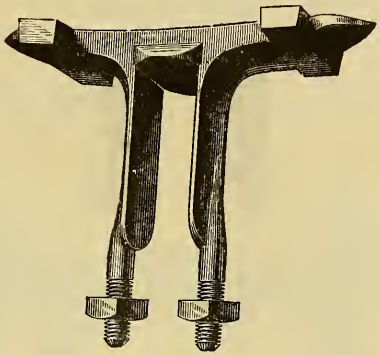
Designed to match the French Coach Clip.

A Set consists of Four Clips.

No. 1	For 1½	in. Axle and	1¾	or 2	in. Springs	$5 00	per set.
2	1⅜	"	1½	1¾	"	4 00	"
3	1¼	"	1¼	1½	"	3 50	"
4	1⅛	"	1¼	1½	"	3 00	"
5	1	"	1	1⅛	"	2 75	"

Each Clip is forged solid, in a workmanlike manner, from one piece of the best Norway iron, and are used in connection with the Short Spring Clips to fasten the axle and spring together of coaches and carriages which have platform springs and iron axles without wood.

AXLE SADDLE CLIP.



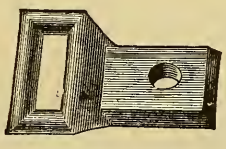
⅞ in.	Axle, for	1¼ in.	Spring	$12 00	per dozen.
1	"	1¼	"	12 00	"
1	"	1⅜	"	12 00	"
1	"	1½	"	14 00	"
1⅛	"	1¼	"	14 00	"
1⅛	"	1⅜	"	14 00	"
1⅛	"	1½	"	14 00	"
1¼	"	1½	"	14 00	"

For Iron Axle Only.

1 in. Axle for 1¼ in. Spring, whole length of Clip 2¼ in., flat part ⅞ in. long ..... $12 00 per dozen.

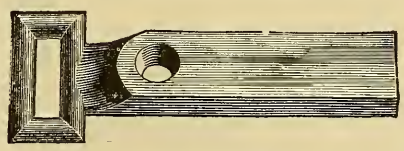
The above Iron is designed to clip on to the Axle, and form a support and fastening for springs on three and four spring work, which are used on axles that are wooded. As shown in the above cut, these Saddle Clips have Flanges projecting between the Clips to give more bearing on the wood and relieve the Clips from strain by the sway of the spring. Each Clip is forged solid from one piece of the best iron, and will be found a superior forging in all respects, and are used in connection with the Short Spring Clips.

SAFETY LOOPS AND LOOP YOKES.



Safety Loop.

Per dozen $10 00

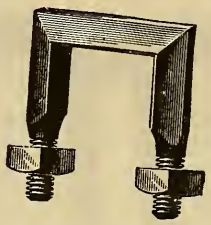


Loop Yoke.

Per dozen $1 25

Packed in Boxes of 4 Doz. each.

PATENT SHORT SPRING CLIP.



Octagon Pattern.

DESIGNED TO BE USED WITH THE FRENCH COACH CLIPS, COACH AXLE CLIPS, AND THE AXLE SADDLE CLIPS.

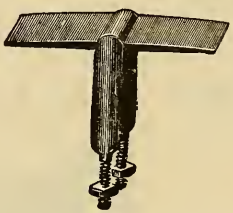
For 3 leaf	1¼	in. Spring, Shank	5/16	in. diameter	----------	$1 75	per dozen.
4 "	1¼	" "	5/16	"	----------	1 75	"
4 "	1¼	" "	3/8	"	----------	2 00	"
3 "	1⅜	" "	3/8	"	----------	2 00	"
4 "	1⅜	" "	3/8	"	----------	2 00	"
3 "	1½	" "	3/8	"	----------	2 00	"
4 "	1½	" "	3/8	"	----------	2 00	"
5 "	1½	" "	3/8	"	----------	2 00	"
5 "	1¾	" "	7/16	"	----------	2 25	"
6 "	1¾	" "	7/16	"	----------	2 25	"

Packed in Boxes of 1 Doz. each.

These Clips are forged from the best Norway iron, the corners being worked out to well-defined sharp angles. They are polished ready for painting, and are entirely new in design, and will make a very neat finish.

BREWSTER & CO'S

PATENT BUGGY SADDLE CLIP.



For Double Perches Only.

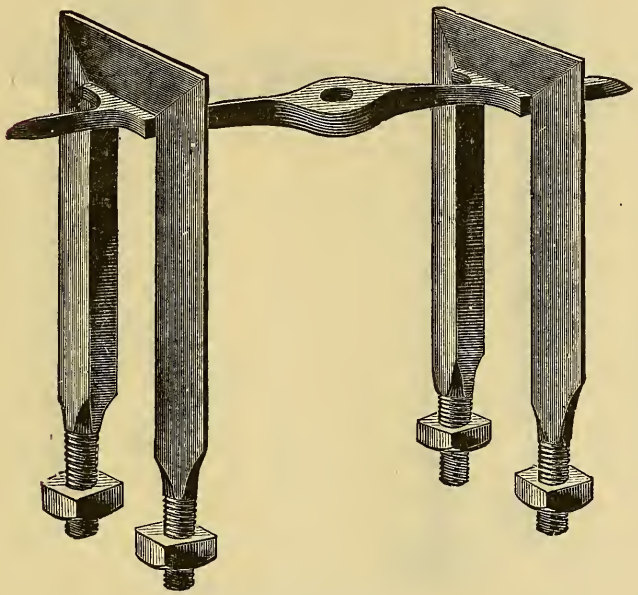
MADE FOR 1¼, 1⅜ AND 1½ IN. SPRINGS.

These Clips are made solid in one piece, of the best Norway iron, and make a strong, solid connection of the Spring and Axle, no bolt used, and are made in such a manner as to give a good finish.

Price $6 00 per Dozen.

BEECHER'S

PATENT BUGGY SADDLE CLIPS.



Sharp Pattern.

Two Clips and One Top Plate make a Set.

Size of Springs,	1¼	in.	Lengths, 2	and	3	in.	$5 00	per doz.	sets.
"	1⅜	"	2¼	"	3¼	"	5 00	"	"
"	1½	"	2½	"	3½	"	5 00	"	"
Clips, without the Top Plate							4 60	"	"

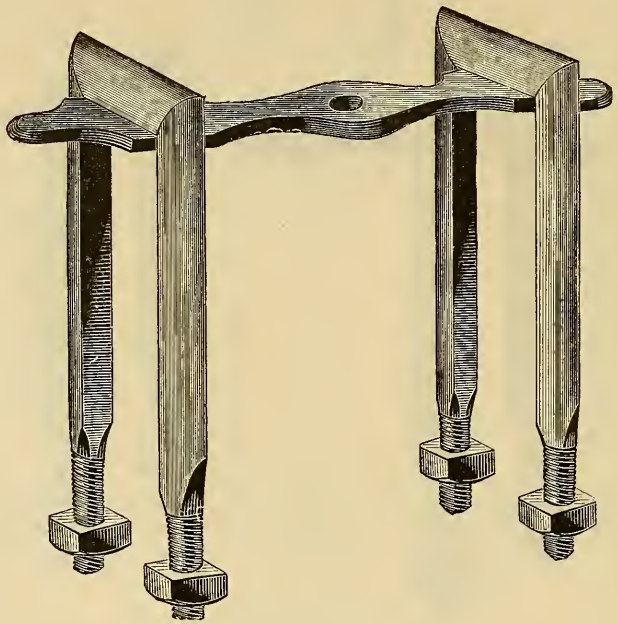
Lengths given are for the Flat Part of the Clip only.

These Clips are designed for use either on Single or Double Perch Buggies. The Top Plate is made of Malleable Iron, and drilled for the Center Bolt in the Spring. The Clips are polished, and ordinarily measure about 4¼ in. whole length, but any length desired can be furnished.

Are packed in Boxes of 1 Doz. Sets each.

BEECHER'S

PATENT BUGGY SADDLE CLIP.



Oval Pattern.

Two Clips and One Top Plate make a Set.

Size of Springs,	1¼	in.	Lengths,	2	and 3	in.	$5 00	per doz.	sets.
"	1⅜	"	"	2¼	" 3¼	"	5 00	"	"
"	1½	"	"	2½	" 3½	"	5 00	"	"
Clip, without the Top Plate							4 60	"	"

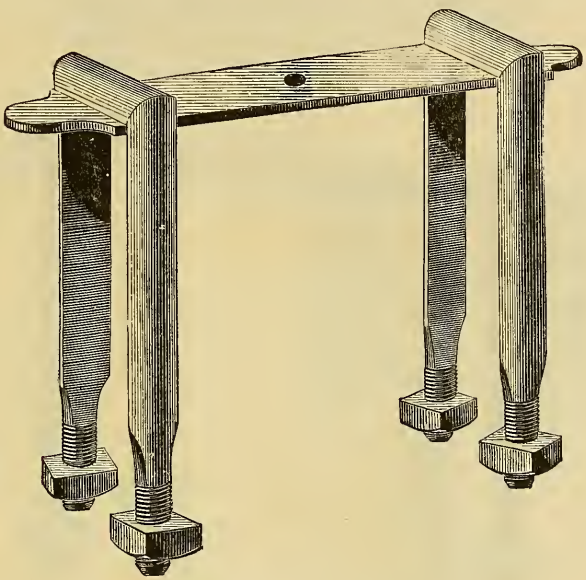
Lengths given are for the Flat Part of the Clip only.

These Clips are designed for use either on Single or Double Perch Buggies. The Top Plate is made of Wrought Iron, with ridges raised on both ends to receive the Clip, which has a depression on the under side to fit. The Short Clips are used on the Front Spring and Head Block.

Are packed in Boxes of 1 Doz. Sets each.

BEECHER'S

PATENT BUGGY SADDLE CLIP.



Half Round Pattern.

Two Clips and One Top Plate make a Set.

FOR 1¼ IN. SPRINGS.

No. 00.	Flat part of Clip,	2	in.	long	with	Top	Plates	$5 00	per dozen	sets.
0.	" " "	2¼	"	"	"			5 00	"	"
1.	" " "	2¾	"	"	"			5 00	"	"
2.	" " "	3	"	"	"			5 00	"	"
3.	" " "	3¼	"	"	"			5 00	"	"
4.	" " "	3½	"	"	"			5 00	"	"

FOR 1⅜ IN. SPRINGS.

No. 5.	Flat part of Clip,	2¼	in.	long,	with	Top	Plates	$5 00	per dozen	sets.
6.	" " "	3¼	"	"	"			5 00	"	"

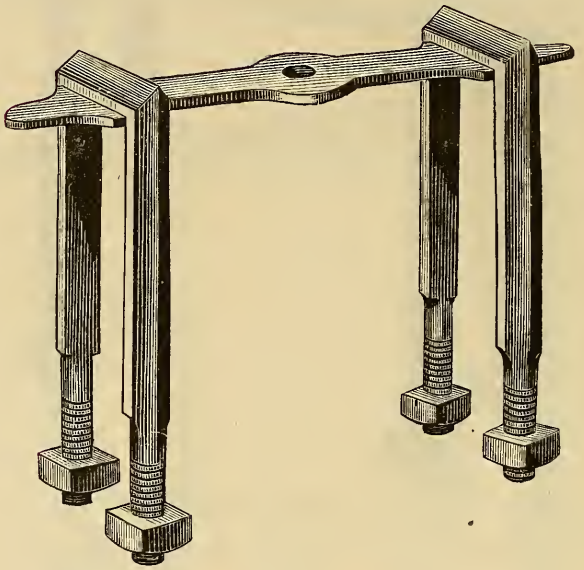
FOR 1½ IN. SPRINGS.

No. 7.	Flat part of Clip,	2½	in.	long	with	Top	Plates	$5 00	per dozen	sets.
8.	" " "	2¾	"	"	"			5 00	"	"
9.	" " "	3½	"	"	"			5 00	"	"
10.	" " "	3¾	"	"	"			5 00	"	"
11.	" " "	4¼	"	"	"			5 00	"	"
Clips without the Top Plates								4 60	"	"

These Clips are designed for use, either on Single or Double Perch Buggies. The Top Plate is made of Wrought Iron, with ridges raised on both ends to fit a depression on the under side of the Clips. The short Clips are used on the Front Spring and Head Block.

Packed in Boxes of 1 Doz. Sets each.

BUGGY SADDLE CLIP.



Diamond Pattern.

Two Clips and One Top Plate make a Set.

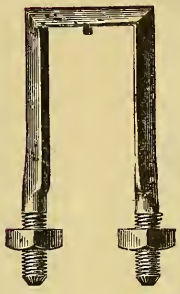
Size of Springs, 1¼ in.	Lengths, 2¼ and 3¼ in.	----------	$5 00	per doz.	sets.
" 1⅜	" 2¼ " 3¼	----------	5 00	"	"
" 1½	" 2½ " 3½	----------	5 00	"	"
Clips without the Top Plate		----------	4 60	"	"

Lengths given are for the Flat Part of the Clip only.

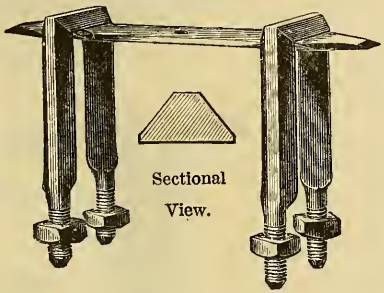
This is an entirely new design, used the same as other styles; has Wrought Iron Plate, and well fitted to the Clips. They are nicely polished and finished ready for painting, making a very neat style.

Packed in Boxes of 1 Doz. Sets each.

BUGGY SADDLE CLIP.



Design Patented.



Smith's Octagon Pattern.

Two Clips and One Top Plate make a Set.

FOR 1¼ IN. SPRINGS.

No. 00	Flat part of Clip, 2		in.	long,	with	Top Plates	-----	$4 00	per doz.	sets.
0	"	"	2⅜	"	"	"	-----	4 25	"	"
1	"	"	2¾	"	"	"	-----	4 50	"	"
2	"	"	3⅛	"	"	"	-----	5 00	"	"
3	"	"	3½	"	"	"	-----	5 50	"	"

FOR 1⅜ AND 1½ IN. SPRINGS.

No. 1	Flat part of Clip, 3		in.	long,	with	Top Plates	------	$5 00	per doz.	sets.
2	"	"	3½	"	"	"	------	5 50	"	"
3	"	"	4	"	"	"	------	6 00	"	"

50 cents per Doz. less without Top Plates.

Lengths given are for the Flat Part of the Clips only.

Top Plates have edges milled to a true bevel, and all the corners on the Clips are worked out to sharp, well-defined angles.

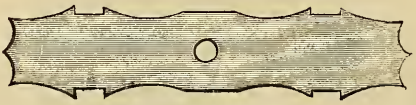
The Clips have projections forged between them, which fit into holes in the Top Plate, to keep them in place.

These Saddle Clips, which are polished ready for painting, are of a new style, that will make neat finish, and we offer them as the best three pieced Saddle Clips in market.

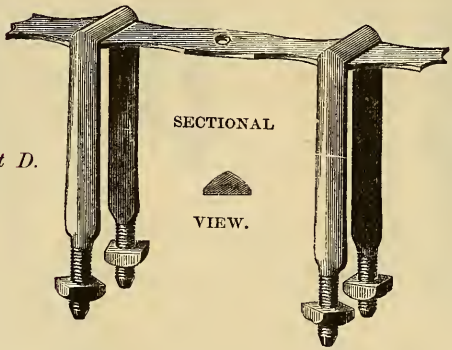
Packed in Boxes of 1 Doz. each.

SEWARD'S

PATENT BUGGY SADDLE CLIP.



PATENT TOP PLATE.



Cut D.

SECTIONAL VIEW.

Two Clips and One Top Plate make a Set.

FOR 1¼ IN. SPRINGS.

No.	00	2	in. long,	with	Patent	Top Plates	$4 00	per doz.	sets.
	0	2⅜	"	"	"	"	4 25	"	"
	1	2¾	"	"	"	"	4 50	"	"
	2	3⅛	"	"	"	"	5 00	"	"
	3	3½	"	"	"	"	5 50	"	"

FOR 1⅜ AND 1½ IN. SPRINGS.

No.	1	3	in. long,	with	Patent	Top Plates	$5 00	per doz.	sets.
	2	3½	"	"	"	"	5 50	"	"
	3	4	"	"	"	"	6 00	"	"

50 cents per Doz. less without Patent Top Plates.

Lengths given are for the Flat Part of the Clips only.

These Clips are made from the best Norway Iron. The patent Top Plates are made of Wrought Iron, with impressions on the edge to hold the Clips in place. The Clips and Plate are polished, ready for painting.

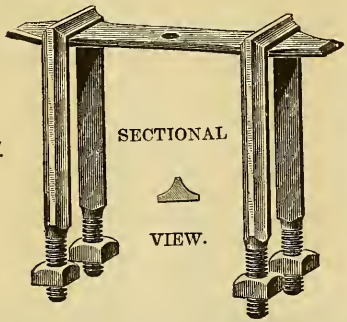
Packed in Boxes of 1 Doz. Sets each.

SEWARD'S

PATENT RIBBED SADDLE CLIPS.

FOR BUGGIES.

Patent Top Plate.



Cut E.

Two Clips and one Top Plate make a set.

FOR 1¼ IN. SPRINGS ONLY.

No. 00.	2	in. long, with Patent Top Plate				$4	25	per dozen sets.	
0.	2⅜	"	"	"	"	4	50	"	"
1.	2¾	"	"	"	"	4	75	"	"
2.	3⅛	"	"	"	"	5	25	"	"
3.	3½	"	"	"	"	5	75	"	"

Fifty cents per dozen less without Patent Top Plates.

Lengths given are for the Flat part of the Clips only.

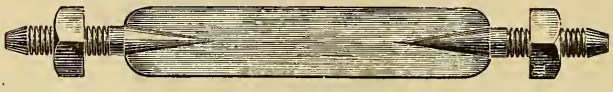
Packed in Boxes of 1 Doz. Sets each.

Above Saddle Clips are entirely new in design, and made of the best Norway Iron. They have a very light and neat appearance, at same time possessing equal strength with Seward's former style, and are especially adapted to very fine class of work. The Patent Top Plates (although of a different design), have the same impressions in the edges to hold the Clips in place, as former pattern, and made of Wrought Iron. The Clips and Plates are finely polished, ready for painting.

The illustration above is an exact representation, and parties using them will readily see that it is the neatest style yet produced.

SEWARD'S

NORWAY IRON AXLE CLIPS.



For Light Trotting Wagons.

	LENGTH OF CENTER.	WIDTH.	SIZE OF SHANK.	PRICE PER DOZEN.
No. 00.	1½ in. long	⅝	¼	$0 80
0.	2 "	⅝	¼	80
1.	2½ "	⅝	¼	80
2.	3 "	⅝	¼	80
3.	3½ "	⅝	¼	80
4.	4 "	⅝	¼	92

Packed in Boxes of 4 Doz. each.

For Buggies.

	LENGTH OF CENTER.	WIDTH.	SIZE OF SHANK.	PRICE PER DOZEN.
No. 00.	2¼ in. long	⅝, ¾ and ⅞ in.	$\frac{5}{16}$ in.	$0 80
0.	2¾ "	⅝, ¾ " ⅞	$\frac{5}{16}$	80
1.	3¼ "	⅝, ¾ " ⅞	$\frac{5}{16}$	80
2.	3¾ "	⅝, ¾ " ⅞	$\frac{5}{16}$	80
3.	4¼ "	⅝, ¾ " ⅞	$\frac{5}{16}$	80
4.	4½ "	⅝, ¾ " ⅞	$\frac{5}{16}$	1 00
5.	5¼ "	⅝, ¾ " ⅞	$\frac{5}{16}$	1 15
6.	6 "	⅝, ¾ " ⅞	$\frac{5}{16}$	1 35

Packed in Boxes of 4 Doz. each.

Above cuts represent the shapes of these Clips. They are fitted up in the very best manner, great pains being taken to have them uniform both in shape and finish, with well cut threads and exact fitting of the nuts, and need no filling for paint.

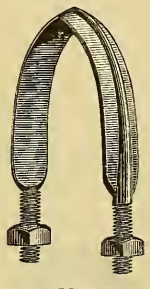
SEWARD'S
NORWAY IRON AXLE CLIPS.

Spring Bar Clip.

	LENGTH OF CENTER.	WIDTH.	SIZE OF SHANK.	PRICE PER DOZEN.
No. 0.	4½ in.	⅝ in.	$\frac{5}{16}$ in.	$1 00
1.	4¾	⅝	$\frac{5}{16}$	1 15
2.	5¼	⅝	$\frac{5}{16}$	1 22
3.	5¾	⅝	$\frac{5}{16}$	1 30
4.	6⅜	⅝	$\frac{5}{16}$	1 45
5.	7	⅝	$\frac{5}{16}$	1 65
6.	7¾	⅝	$\frac{5}{16}$	1 85

Packed in Boxes of 4 Doz. each.

Cut A.



PATENTED MARCH 14, 1871.

Sharp Center Ribbed Clip.

USED FOR SPRING BARS.

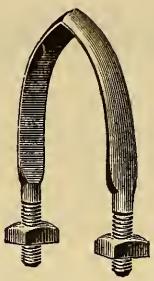
	LENGTH OF CENTER.	WIDTH.	SIZE OF SHANK.	PRICE PER DOZEN.
No. 0.	4½ in. long	⅝ in.	$\frac{5}{16}$ in.	$1 05
1.	4¾ "	⅝	$\frac{5}{16}$	1 20
2.	5¼ "	⅝	$\frac{5}{16}$	1 27
3.	5¾ "	⅝	$\frac{5}{16}$	1 35
4.	6⅜ "	⅝	$\frac{5}{16}$	1 50
5.	7 "	⅝	$\frac{5}{16}$	1 70

Packed in Boxes of 4 Doz. each. Please order by Cut A.

Cut A represents same style of Clip as the Spring Bar Clip, with the exception that they are forged with a sharp center, and bent so that they are easily adjusted to any shape of Bed or Spring Bar. They are made a little concave in bending, so that the edges will fit nicely to the wood. The cost is only 5 cents per dozen more than the Straight Clip — just the difference in cost of manufacture — and make a finer finish.

SEWARD'S
NORWAY IRON AXLE CLIPS.

Cut B.



Sharp Center Clip.

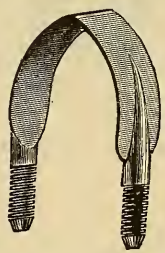
USED FOR AXLE OR SPRING BARS.

	LENGTH OF CENTER.	WIDTH.	SIZE OF SHANK.	PRICE PER DOZEN.
No. 0.	4¼ in. long	9/16 in.	5/16 in.	$1 20
1.	4¾ "	9/16	5/16	1 30
2.	5⅜ "	9/16	5/16	1 45
3.	6⅛ "	9/16	5/16	1 60
4.	6⅞ "	9/16	5/16	1 80

Packed in Boxes of 4 Doz. each. Please order by Cut B.

In bending these Clips they are made a little concave, so that the edge will fit down nicely to the wood, and the difference in cost is only 5 cents per dozen more than the straight. The flat part of these Clips is same length as the straight.

Cut C.



Flat Sharp Center Clip.

	LENGTH OF CENTER.	WIDTH.	SIZE OF SHANK.	PRICE PER DOZEN.
No. 0.	2¾ in. long	⅝ and ⅞ in.	5/16 in.	$0 85
1.	3¼ "	⅝ " ⅞	5/16	85
2.	3¾ "	⅝ " ⅞	5/16	90
3.	4¼ "	⅝ " ⅞	5/16	95
4.	4¾ "	⅝ " ⅞	5/16	1 05
5.	5¼ "	⅝ " ⅞	5/16	1 20

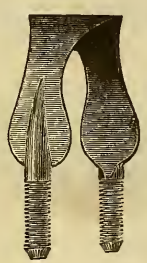
Packed in Boxes of 4 Doz. each. Please order by Cut C.

Above are same as the common Buggy Clip, with the exception that they are forged with a sharp center, and bent so that they are easily adjusted to any shape of wood.

SEWARD'S

NORWAY IRON AXLE CLIPS.

Cut O G.



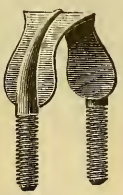
O G Sharp Center.

	LENGTH OF CENTER.	WIDTH.	SIZE OF SHANK.	PRICE PER DOZEN.
No. 00.	2¼ in.	1 in.	5/16 in.	$1 00
0.	2¾	1	5/16	1 00
1.	3¼	1	5/16	1 00
2.	3¾	1	5/16	1 05
3.	4¼	1	5/16	1 10
4.	4¾	1	5/16	1 20
5.	5¼	1	5/16	1 30

Packed in Boxes of 4 Doz. each. Please order by Cut O G.

Above are used for very fine fancy work, and certainly make an elegant finish.

Cut O G.



New Pattern.

O G Sharp Center, New.

FOR BUGGY PERCH PLATES AND SLEIGH WORK.

	LENGTH OF CENTER.	WIDTH.	SIZE OF SHANK.	PRICE PER DOZEN.
No. 00.	1½ in.	¾ in.	¼ in.	$1 00
0.	2	¾	¼	1 00
1.	2½	¾	¼	1 00

Packed in Boxes of 4 Doz. each. Please order by ¼ in. O G Clips.

The New Pattern of O G Clip is designed especially for trotting wagons, buggy perch plates, and very fine sleighs, making a finer and better finish, stronger and more durable than either bolts or rivets. They are forged with a Sharp Center and Rib, are easily fitted to the perch of buggies and knees of sleighs.

SEWARD'S

NORWAY IRON AXLE CLIPS.

For Heavy Wagons and Rockaways.

	LENGTH OF CENTER.	WIDTH.	SIZE OF SHANK.	PRICE PER DOZEN.
No. 0.	4 in.	1¼ in.	⅜ in.	$1 00
1.	4½	1¼	⅜	1 00
2.	5	1¼	⅜	1 15
3.	5½	1¼	⅜	1 25
4.	6	1¼	⅜	1 40
5.	6½	1¼	⅜	1 75
6.	7¼	1¼	⅜	2 25

Packed in Boxes of 4 Doz. each.

For Express and Truck Wagons.

	LENGTH OF CENTER.	WIDTH.	SIZE OF SHANK.	PRICE PER DOZEN.
No. 0.	5 in.	1⅝ in.	$\frac{7}{16}$ in. and 1½ in. long	$2 00
1.	6	1⅝	$\frac{7}{16}$ " 1½ "	2 25
2.	7	1¾	$\frac{7}{16}$ " 1½ "	2 50
3.	8	1¾	$\frac{7}{16}$ " 1½ "	2 90
4.	9	1¾	$\frac{7}{16}$ " 1½ "	3 25
5.	10	1¾	$\frac{7}{16}$ " 1½ "	3 75

Packed in Boxes of 2 Doz. each.

The above illustrations represent the shape of both styles of Clips, fitted up in first-class manner; are very smooth finish, and require no filling for paint.

The Express and Truck Wagon Clips are especially adapted for heavy work, and are not surpassed for this purpose.

AXLE CLIPS.

Superior Axle Clip.

	LENGTH OF CENTER.	WIDTH.	SIZE OF SHANK.	PRICE PER DOZEN.
No. 0.	2¾ in.	⅞ in.	5/16 in.	$ 70
1.	3¼	⅞	5/16	70
2.	3¾	⅞	5/16	70
3.	4¼	⅞	5/16	78
4.	4¾	15/16	⅜	97
5.	5¼	1	⅜	1 20
6.	6	1⅛	⅜	1 50

Made of Best Refined Iron.

Packed in Boxes of 4 Doz. each.

The above represents a Clip for all ordinary classes of work. Already well known among carriage makers and the trade, as a cheap Clip of superior strength and finish.

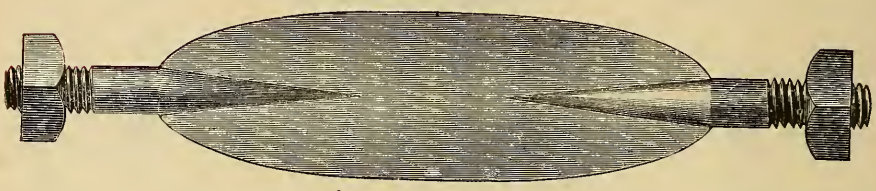
Common Norway Axle Clip.

	LENGTH OF CENTER.	WIDTH.	SIZE OF SHANK.	PRICE PER DOZEN.
No. 0.	2¾ in.	⅞ in.	5/16 in.	80
1.	3¼	⅞	5/16	80
2.	3¾	⅞	5/16	80
3.	4¼	⅞	5/16	90
4.	4¾	15/16	5/16	1 10
5.	5¼	1	5/16	1 25
6.	6	1⅛	⅜	1 50

Packed in Boxes of 4 Doz. each.

The Common Norway Axle Clips are well finished, and in general appearance are not excelled, having a smooth finish, well cut threads, and good fitting nuts, and are fitted up in first-class manner.

AXLE CLIPS.



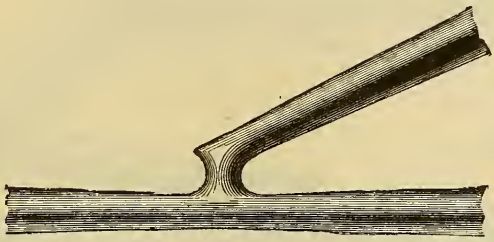
Extra Heavy Clip.

	LENGTH OF CENTER.	SIZE OF SHANK.	PRICE PER DOZEN.
No. 1.	9 in.	$\frac{7}{16}$ in.	$2 50
2.	9½	$\frac{7}{16}$	2 55
3.	10	$\frac{7}{16}$	2 60
4.	10½	$\frac{7}{16}$	2 65
5.	11	$\frac{7}{16}$	2 70
6.	9	½	2 75
7.	9½	½	2 80
8.	10	½	2 85
9.	10½	½	2 90
10.	11	½	3 00
11.	11½	½	3 10
12.	12	½	3 20
13.	13	½	3 40
14.	14	½	3 60
15.	15	½	3 80
16.	16	½	4 00

The flat part of above Clip can be made any length desired, and width from 1½ to 2 inches. They are made from the very best of refined iron, and are especially adapted to Farm Wagons, Heavy Truck Wagons, and Omnibus work.

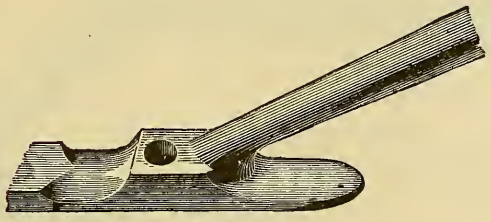
REACH STAY ENDS AND OFFSETS.

NORWAY IRON.



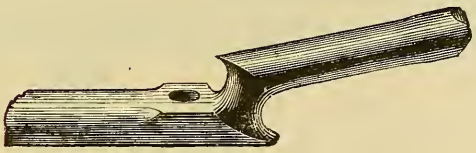
No. 1. Offset for Reach Brace.

For ⅜ and $\frac{7}{16}$ in. Stay ..... $3 00 per doz.
½ in. " ..... 3 50 "



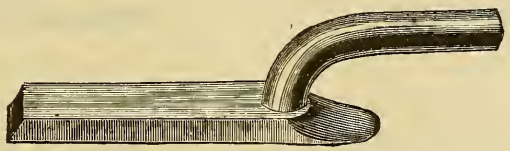
No. 2. Stay End.

For ⅜ and $\frac{7}{16}$ in. Brace ..... $3 50 per doz.



No. 3. Stay End.

For ⅜ and $\frac{7}{16}$ in. Brace ..... $3 00 per doz.
½ in. ..... 3 50 "

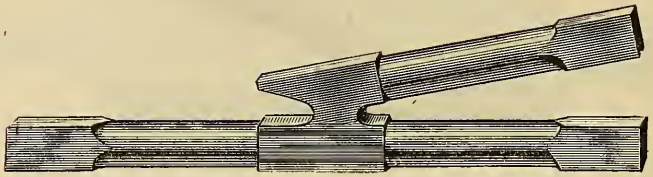


No. 4. Stay End.

For ⅜ and $\frac{7}{16}$ in. Brace ..... $3 00 per doz.

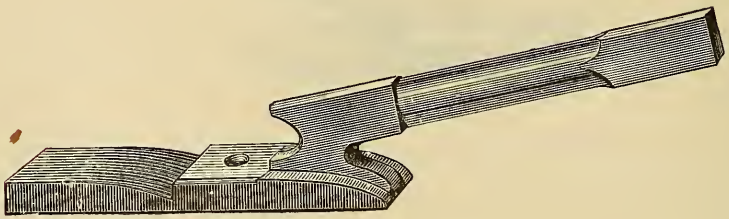
REACH STAY ENDS AND OFFSETS.

NORWAY IRON.



No. 5. Offset for Reach Brace.

For $\frac{3}{8}$ and $\frac{7}{16}$ in. Stay ..... $3 00 per dozen.
" $\frac{1}{2}$ in. Stay ..... 3 50 "



No 6. Stay End.

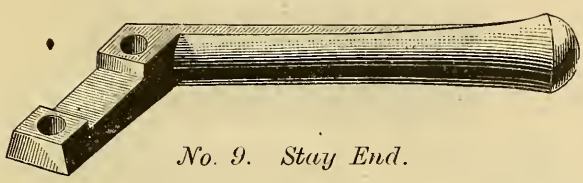
For $\frac{3}{8}$ and $\frac{7}{16}$ in. Brace ..... $3 00 per dozen.
" $\frac{1}{2}$ in. Brace ..... 3 50 "

Stay Ends.

No. 7. Double. *No. 8. Single.*

For $\frac{3}{8}$ and $\frac{7}{16}$ in. Double Brace ..... $3 00 per dozen.
" $\frac{3}{8}$ " $\frac{7}{16}$ Single " ..... 3 00 "

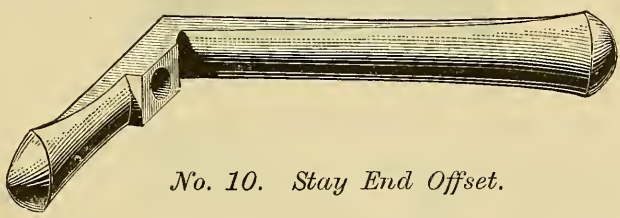
REACH STAY ENDS AND OFFSETS.



No. 9. Stay End.

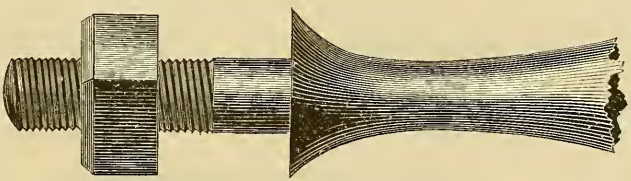
For $\frac{3}{8}$ and $\frac{7}{16}$ in. Stay ..... $3 00 per dozen.
" $\frac{1}{2}$ in. Stay ..... 3 50 "

Above is for Back Stay End, with recess for the Axle to set in, lessening the strain on the bolts, being forged on an angle, with plenty of stock to weld on to the Brace Stay. Above can also be furnished without the recess or raised shoulder end if desired.



No. 10. Stay End Offset.

For $\frac{3}{8}$ and $\frac{7}{16}$ in Brace ..... $3 00 per dozen
" $\frac{1}{2}$ in. Brace ..... 3 50 "



No. 12. Brace Ends.

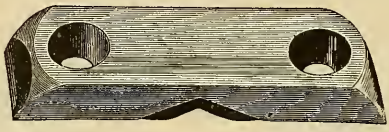
Light	$\frac{5}{16}$	in. diameter,	1	in.	long	under Collar	$1 25	per dozen.
"	$\frac{5}{16}$	"	$1\frac{1}{2}$	"	"	"	1 25	"
"	$\frac{5}{16}$	"	2	"	"	"	1 25	"
Medium	$\frac{3}{8}$	"	1	"	"	"	1 50	"
"	$\frac{3}{8}$	"	2	"	"	"	1 50	"
"	$\frac{5}{8}$	"	$2\frac{1}{2}$	"	"	"	1 50	"
Heavy	$\frac{1}{2}$	"	$1\frac{1}{2}$	"	"	"	1 75	"
"	$\frac{1}{2}$	"	$2\frac{1}{2}$	"	"	"	1 75	"
"	$\frac{1}{2}$	"	$3\frac{1}{4}$	"	"	"	1 75	"
Extra Heavy.	$\frac{5}{8}$	"	2	"	"	"	2 00	"
"	$\frac{5}{8}$	"	3	"	"	"	2 00	"
"	$\frac{5}{8}$	"	$3\frac{1}{2}$	"	"	"	2 00	"

AXLE CLIP YOKES.

Wrought Iron Yoke, Plain, Holes Drilled.

DISTANCE BETWEEN HOLES.	SIZE OF HOLES.	PRICE PER POUND.
⅞, 1, 1⅛, 1¼, 1⅜, 1½ in	5/16 in.	14 cents.

Packed in Boxes of 10 Pounds each.



Patent Drilled Wrought Iron Yoke.

DISTANCE BETWEEN HOLES.	SIZE OF HOLES.	PRICE PER DOZEN.
¾, ⅞ and 1 in	¼ in.	40 cents
⅞, 1, 1⅛ and 1¼ in	5/16 in.	40 "
1⅜, and 1½ in	5/16 in.	50 "
1⅜, and 1½ in	⅜ in.	50 "

Packed in Boxes of 4 Doz. each.

These Clip Yokes are forged of best refined iron, with beveled ends, and polished ready for use. The holes are drilled exact to size and distances apart the same as the labels and list call for.

Patented February 10, 1874.

Patent Metal Yoke.

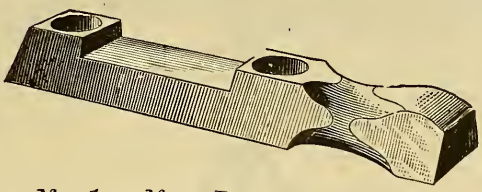
DISTANCE BETWEEN HOLES.	SIZE OF HOLES.	PRICE PER POUND.
¾, ⅞, 1, 1⅛, 1¼ and 1⅜ in	5/16 in.	14 cents.

Packed in Boxes of 10 Pounds each.

This Yoke has beveled ends corresponding with the shape of the Nuts on the Clips, making a very neat finish; while they are made of material which renders them both lighter and stronger than the ordinary malleable iron or common wrought iron Clip Yoke.

AXLE CLIP YOKES.

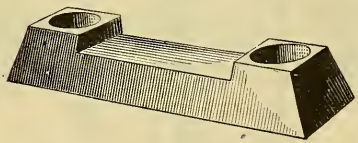
WROUGHT IRON, FORGED.



No. 1. New Pattern, Stay End.

SIZE OF AXLES.	SIZE OF HOLES.	PRICE PER DOZEN.
¾, ⅞, 1, 1⅛, 1¼ in.	$\frac{5}{16}$ in.	$1 00

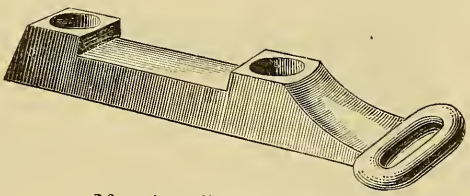
Packed in Boxes of 4 Doz. each.



No. 2. New Flanged Pattern.

SIZE OF AXLES.	SIZE OF HOLES.	PRICE PER DOZEN.
¾, ⅞, 1, 1⅛, 1¼ in.	$\frac{5}{16}$ in.	$0 60

Packed in Boxes of 2 Doz. each.



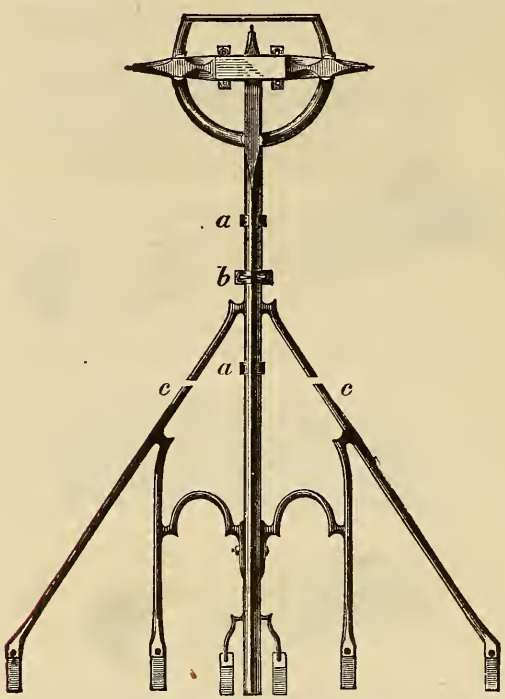
No. 4. Loop Pattern.

SIZE OF AXLES.	SIZE OF HOLES.	PRICE PER DOZEN.
⅞, 1, 1⅛, 1¼ in.	$\frac{5}{16}$ in.	$1 25

Packed in Boxes of 2 Doz. each.

This is a new article of Tie or Axle Yoke, with ⅞ inch Loop to take safety strap from shaft to axle bed. Very desirable for nice work; all ready to put on; milled to exact fit and finish.

McGUIRE'S CARRIAGE GEARING.



The above cut represents a Carriage Gearing furnished with side braces, circle, head-block and perch plate, fitted and finished complete. The braces, circle, and perch plate are forged solid from the best Norway iron. This shape is new style, and it makes a strong and neat finish.

(*A A*) is form of clips raised on the perch plate for the perch to rest in. (*B*) is the cross yoke and clip. These braces are not bolted on the side of the perch; there is no bolt put through the perch or braces to weaken them; they are made solid on the under side of the perch, and forming part of the same, the clips raised solid on the perch plate and circle, gives great support to the perch, and obviating the danger of it breaking. By connecting the braces to the perch plate saves considerable work, and makes a strong and better finish than the old way of bolting them to the side of the perch.

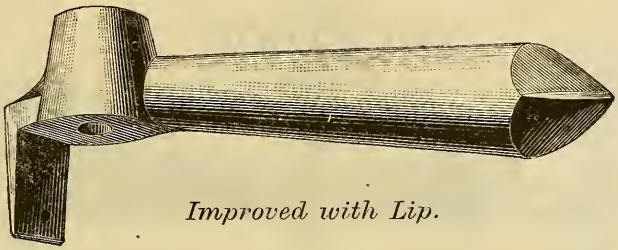
This gearing can be made to fit any length of body desired, as the wood perch is not finished at the end for the axle bed, and there is one weld to be made in each brace at (*C C*). The wood head-block and perch is the best selected hickory. The McGuire's circle and perch plate are used exclusively on these gearings.

We deem this to be the best, neatest and cheapest gearing that can be used. Carriage makers will save over 30 per cent. by using them. The two axle beds will be furnished with gearing, if ordered, at $1.50 advance.

		DIAMETER CIRCLE.	SIZE IRON.	SIZE AXLE.	SIZE PERCH.	SIZE BRACES.	STRAIGHT.	PER SET.
6	Extra Light,	10	1/2	3/4	3/4	5/16	Perch.	$9 50
7	" "	12	1/2	7/8	7/8	3/8	"	9 50
8	Medium,	12	5/8	7/8 or 1	7/8	3/8	"	9 50
9	Ordinary,	12	5/8	1	1	7/16	"	9 50
10	Heavy,	14	3/4	1 1/8	1	7/16	"	10 00
11	Extra Heavy,	14	3/4	1 1/4	1 1/8	1/2	"	10 00

By specifying the No. (when ordering) that size will be sent. The diameter of circle, size of iron perch and axle, can be made any size desired. Be sure to state whether the perch is to be straight or bent.

BODY LOOPS.



Improved with Lip.

Four Loops to a Set.

No. 1.	Size of Bolt, $\frac{1}{4}$ in.	$0 80	per set.
2.	" " $\frac{5}{16}$	80	"
3.	" " $\frac{3}{8}$	80	"

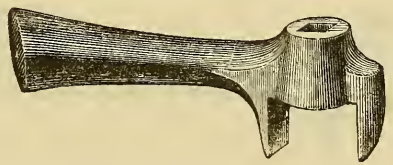
Above is forged from the solid bar, the hole is drilled to exactly take the Bolt, with square socket for square part of Bolt, and Loop End is milled and finished ready for use.

Plain, without Loop.

Four Loops to a Set.

No. 4.	Size of Bolt, $\frac{1}{4}$ in.	$0 65	per set.
5.	" " $\frac{5}{16}$	65	"
6.	" " $\frac{3}{8}$	65	"

Packed in Boxes of 6 Sets each.



No. 7. Double Lipped.

Four Loops to a Set.

Size of Spring Bar, $\frac{3}{4}$ in.	Size of Bolt, $\frac{1}{4}$ in.	$1 25	per set.
" " " $\frac{7}{8}$	" " $\frac{5}{16}$	1 25	"
" " " 1	" " $\frac{5}{16}$	1 25	"

In the Double-Lipped pattern the strain on the Bolt is relieved by the projections downward upon both the front and rear sides of the Spring Bar, so as to grasp it firmly and with sufficient strength to support the bar and carriage together.

All of the above are forged from Best Iron.

BODY LOOPS.

No. 8. Plain, without Flange or Lip.

Four Loops to a Set.

No. 1. Size of Bolt, $\frac{5}{16}$ in. ..... 90 cts. per set.
2. " $\frac{1}{4}$ ..... 90 "

No. 9. Lipped, without the Flange.

Four Loops to a Set.

No. 1. Size of Bolt, $\frac{5}{16}$ in. ..... $1 10 per set.
2. " $\frac{1}{4}$ ..... 1 10 "

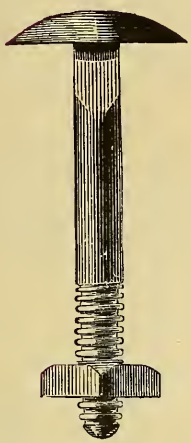
No. 10. Lipped and Flanged.

Four Loops to a Set.

No. 1. Size of Bolt, $\frac{5}{16}$ in. ..... $1 25 per set.
2. " $\frac{1}{4}$ ..... 1 25 "

The above Body Loops are all made with a square hole at the top and round hole at the bottom to receive the $\frac{5}{16}$ and $\frac{1}{4}$ in. Bolts. Are all forged from Norway iron. The cuts above represent them as they are made ready for use.

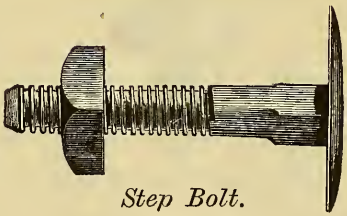
FANCY CARRIAGE BOLTS.



Elliptic Head.

Cone Head.

Steeple Head.



Step Bolt.

$\frac{3}{16}$ in. and $\frac{1}{4}$ in.

LIST PRICES same as Norway Iron Carriage Bolt List.

SHACKLE BOLTS.

Round Neck.

Square Neck.

Round Neck is $\frac{3}{8}$ and $\frac{7}{16}$ in. ..... $6 50 per hundred.

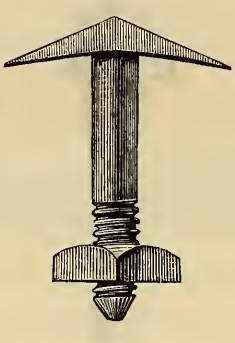
Square " $\frac{3}{8}$ in. ..... 7 50 "

Are Milled to fit different kinds of Shaft Couplings.

Packed in Boxes of 50 each.

SHAFT BOLTS.

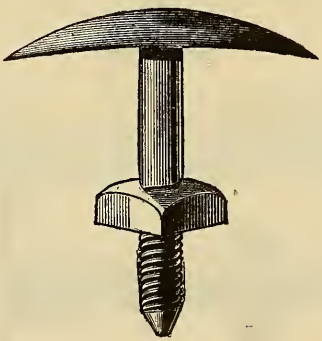
$\frac{3}{16}$ IN.	Per 100.
1 in.	$2 80
1¼	2 95
1½	3 10
1¾	3 25
2	3 40
2¼	3 55
2½	3 70



¼ IN.	Per 100.
1 in.	$2 80
1¼	2 95
1½	3 10
1¾	3 25
2	3 40
2¼	3 55
2½	3 70

T Head Shaft Bolt.

$\frac{3}{16}$ IN.	Per 100.
1 in.	$3 90
1¼	4 05
1½	4 20
1¾	4 35
2	4 50

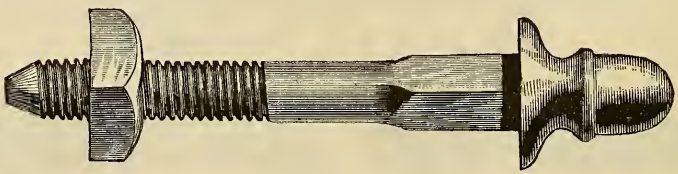


¼ IN.	Per 100.
1 in.	$3 90
1¼	4 05
1½	4 20
1¾	4 35
2	4 50

Improved Shaft Bolt.

These Shaft Bolts are made of best Norway Iron.

SILVER HEAD BODY LOOP BOLTS.



Acorn Head.

Also keep them Cone Head.

Size of Bolt, ¼ in. Lengths, 2¼, 2½, 2¾ in. ..... $1 50 per doz.
" $\frac{5}{16}$ " 2¼, 2½, 2¾, 3 in. ..... 1 50 "

Gold Plated are extra.

FELLOE PLATES.

Wrought Iron Felloe Plate.

Sizes to fit..... ⅞ 1 1⅛ 1¼ 1⅜ 1½ 1⅝ 1¾ 2 in. Rims.

Packed in Boxes of 10 Pounds each.

Our Plates are made of superior Iron, nicely Punched ready for use.

Price per pound.....14 cents.

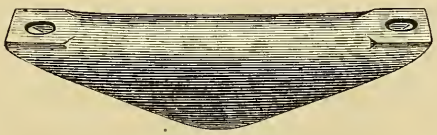
Steel Felloe Plate.

Sizes to fit..... ¾, ⅞, and 1 in. Rims.

Packed in Boxes of 5 Pounds each.

These Plates are made for fine Light Carriages, where a stiffer plate than iron is desired, and at same time lighter.

Price per pound.....30 cents.



Malleable Iron Felloe Plate.

Sizes to fit..... ⅞ 1 1⅛ 1¼ 1⅜ 1½ 1⅝ 1¾ 2 in. Rims.

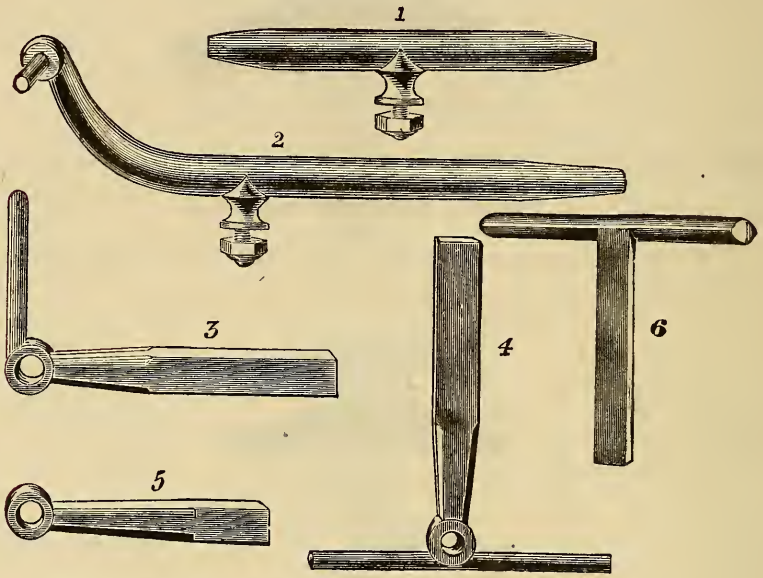
Packed in Boxes of 10 Pounds each.

These Plates are made with Square Ends to correspond with the Nut used, making a much finer finish than the common style, and stronger at the ends where they generally fail, are very smooth, and finished up in good style.

Price per pound.....15 cents.

SEWARD'S

IMPROVED SHIFTING TOP RAILS.



Two pieces each Nos. 1, 2, 3, 5 and 6, for a set Single Rail.
" " " 1, 2 and 6 " " Double "
Four " " 4, " " " "

Single Rails.....$3 25 per set.
Double " ..... 3 75 "

Extra Pieces can be furnished at the following:

One Piece	Nos. 1,	2	3	4	5	6	
	30	45	15	25	12½	33	cts. each.

Packed in Boxes of One Set each. They are put together as follows:

SINGLE RAIL.

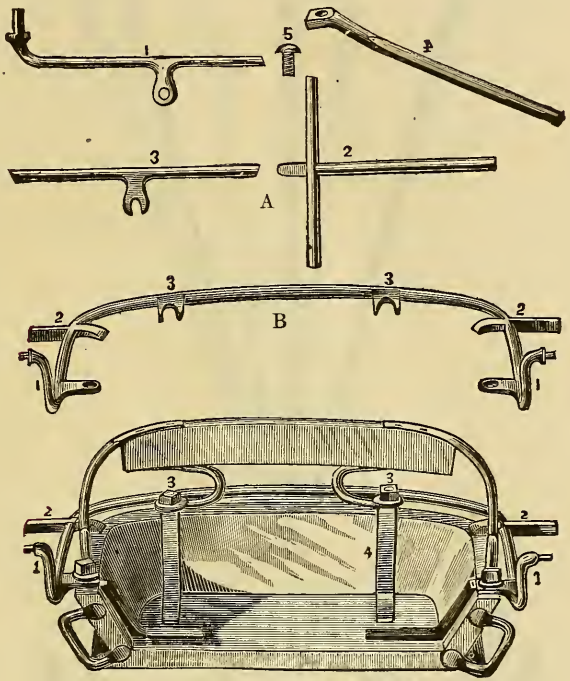
Two pieces of No. 3 are used, one on each side, fastened to Seat, the rod running forward to be bent down to form a handle. The No. 5 pieces are fastened to back of Seat, two generally being used. Nos. 1, 2 and 6 pieces are for the top, No. 2 fastening into No. 3 in each side; No. 1 into No. 5. The No. 6 are the corner or Prop Irons that the lower end of the long joint is attached to, the ends to be swedged round to fit the eye.

DOUBLE RAIL, OR RAIL AROUND THE SEAT.

These are put together the same as above, with the exception that the No. 4 pieces are used on the Seat, instead of Nos. 3 and 5.

DAILEY'S

IMPROVED SHIFTING TOP RAILS.



Cut A shows Sections as furnished. Cut B shows Sections put together. Cut C shows Rail attached.

Two pieces each Nos. 1, 2 and 3, together with four pieces No. 4, and four Screw Bolts No. 5, make a set.

Put up in Sections as in Cut "A" .....$3 25 per set.

Packed in Boxes of One Set each.

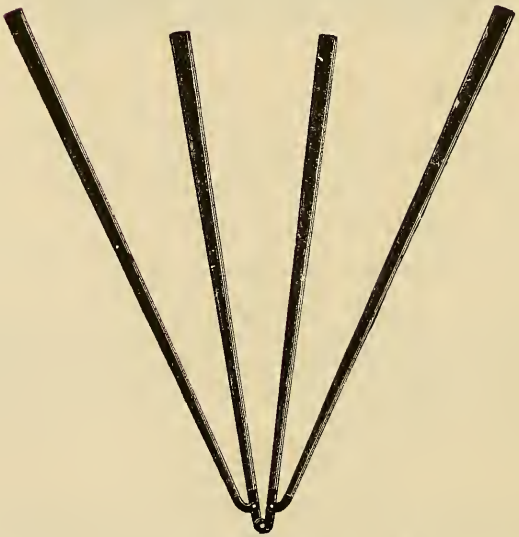
The No. 4 pieces are fastened to the Seat, being let in even with the outside and top, so as to form a smooth surface when top is off; No. 1 on each side and No. 2 behind, placed so as to take Screw Bolts, No. 5, through the holes in Nos. 1 and 3, which secures the Rail to Seat. The Lazy Back is fastened on top of the Rail with the Screw Bolts, No. 5, at Nos. 1 and 3.

TO REMOVE THE TOP.

Take out Screw Bolts on each side, also loosen at the back, slide the Rail back, and off it comes, leaving the Lazy Back attached to Seat. Replace Screw Bolts and tighten up. This leaves the Seat smooth, without projections. The Seat Irons, No. 4, are drilled and threaded to take Screw Bolts No. 5.

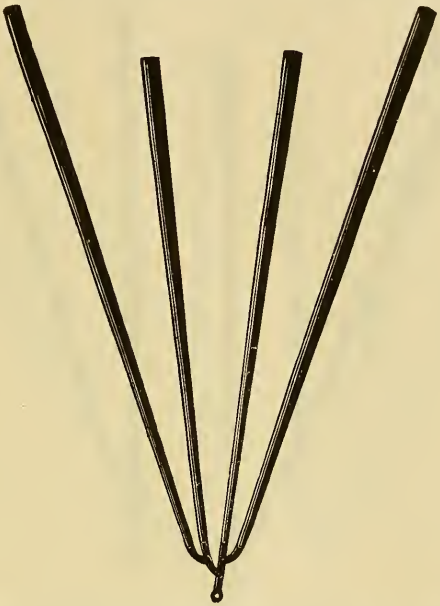
TUBULAR BOW SOCKETS.

Three Bow Socket. $3.50 per set.

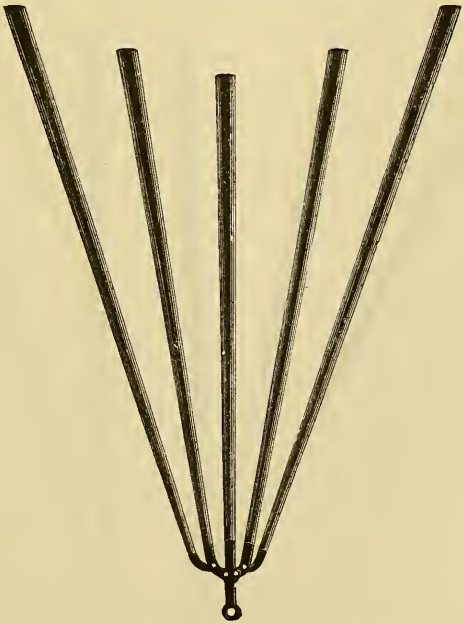


Four Bow, New York Pattern. $4.50 per set.

TUBULAR BOW SOCKETS.



Four Bow, Philadelphia Pattern. $4.50 per set.



Five Bow, Philadelphia Pattern. $5.50 per set.

TUBULAR BOW SOCKETS.

Four Bow, Extension Top. $5.00 per set.

Five Bow, Extension Top. $6.00 per set.

TUBULAR BOW SOCKETS.

Six Bow, Extension Top.

Price.....$7 00 per set.

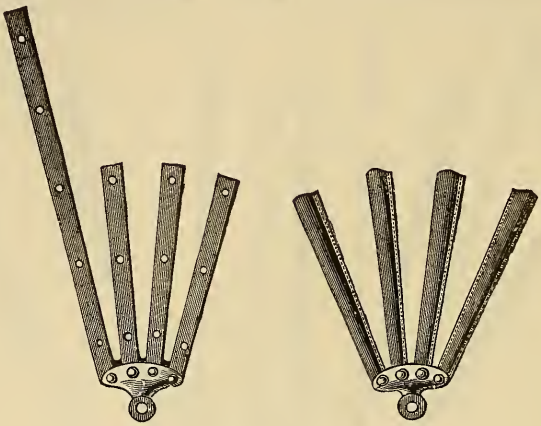
DIRECTIONS FOR USING THE FILLED TUBULAR BOW SOCKET.

Proceed in setting the bows in the same manner as for ordinary slat irons, by draft or otherwise, marking the place on each bow to which the top of the Bow Socket is to extend.

As the tubes are filled to within about six inches of the top, the bows should be cut off just long enough to fill the balance of the tubes unfilled — each one being measured separately. After cutting the bows off to the required length, take a grooving tool and make a groove on the inside of the bows, large enough to receive the bead or fold on the inside of the socket; then taper and round them so that they can be pushed into the socket by hand, to within three-fourths of an inch of the mark. After fitting all in this way, fasten the Bow Socket in place on the body, and having applied white lead or glue to the bows, drive them in to the mark.

Be careful to use for the back bow the tube marked "Back Bow," as it has a steel strip welded in to prevent its bending at the prop.

SLAT IRONS.

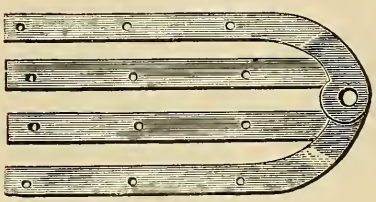


Bidwell's Patent.

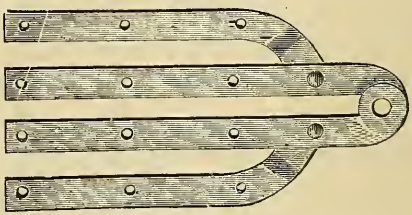
JAPANNED.	PER DOZEN SETS.	SILVER.	PER DOZEN SETS.
4 Bow, Long	$7 12	4 Bow, Long	$15 00
4 " Short	6 25	4 " Short	14 40
4 " Long, Light	7 12	4 " Long, Light	15 00
4 " Short "	6 25	4 " Short "	14 40
5 " Long	9 00	5 " Long "	18 00
5 " Short	7 80	5 " Short "	17 00
5 " Extension	16 00	5 " Extension	26 00

The Bidwell Slat Irons are secured in a substantial socket, formed by two flanges of iron riveted together solid between the Slats, and are made of best Wrought Iron.

WROUGHT SLAT IRONS.



No. 1 Pattern.



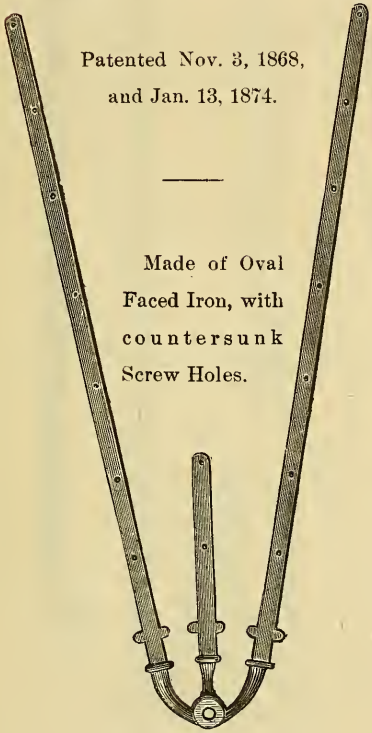
No. 2 Pattern.

Four Bow, Nos. 1 or 2 ..... $3 00 per dozen sets.

Five Bow, 1 " 2 ..... 4 00 " "

FORGED SLAT IRONS.

Showing Slat Iron as sent to market.



Patented Nov. 3, 1868, and Jan. 13, 1874.

Made of Oval Faced Iron, with countersunk Screw Holes.

Manner of fastening to Bow.

N. B.—By the use of this Slat Iron, the breaking and the splitting of Bows is avoided.

These Cuts are one-sixth size, length and width.

New Haven Pattern

Forged

Three Bow Slat Irons.

Same in construction as the four bow Slat Iron on following page, except one middle iron less.

The necessity of putting into three bow tops the strongest Slat Iron that can be obtained, has created a demand for this one.

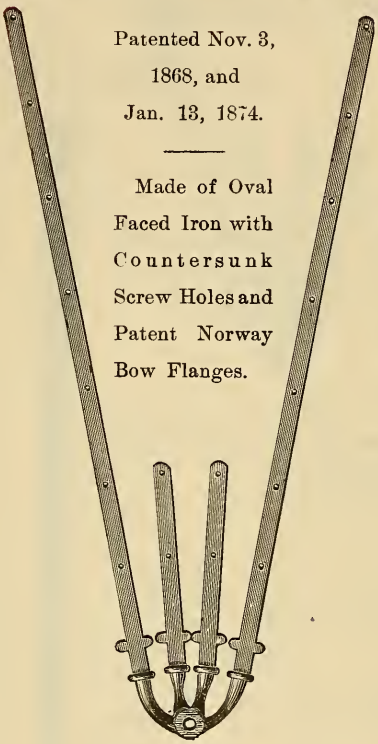
We present it as the strongest and most desirable three bow Slat Iron made.

$13 50 per dozen sets.

Packed in Boxes of 1 Doz. sets each.

FORGED SLAT IRONS.

Showing Slat Iron as sent to Market.



Patented Nov. 3, 1868, and Jan. 13, 1874.

Made of Oval Faced Iron with Countersunk Screw Holes and Patent Norway Bow Flanges.

N. B.—By the use of this Slat Iron, the breaking and the splitting of Bows is avoided.

These Cuts are one-sixth size length and width.

New Haven Pattern

Forged

Four Bow Slat Irons.

Manner of fastening to Bow.

THE BEST FORGED CARRIAGE SLAT IRON YET MADE.

In addition to the merit of being constructed entirely of wrought iron, the following improvements are noticeable:

1st. The flange fastening or lip for binding the lower end of the Wood Bow to the Slat, thereby making a more secure connection than can be made with screws (the wood being usually too thin to enable them to hold), and *also effectually preventing the Bow from splitting.*

2d. The lengthening out of both front and back slat; in the former thereby avoiding the liability of the bows breaking when taken hold of for the purpose of assistance in getting into a carriage, and in the latter greatly strengthening the back bow, which rests on the back prop iron, and supports the weight of the top when down.

3d. In avoiding the necessity of riveting, as in the New York and other patterns, so that each Bow can be covered separately by the trimmer, and if preferred, the bow covers can be stitched on the sewing machine, and drawn on afterwards.

N. B.—The patents cover the process of manufacture and the improvements.

Made with Oval Faced Iron, Four Bows..... $15 00 per dozen sets.

Packed in Boxes of 1 Doz. Sets each.

FORGED SLAT IRONS.

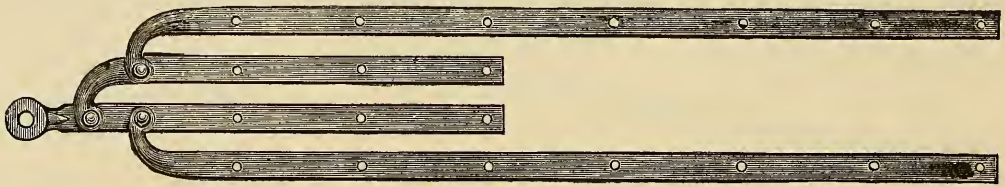
Philadelphia Pattern Improved.

Four Bow	$ 7 50	per dozen	sets.
Five Bow	9 50	"	"
Six Bow	11 50	"	"
Four Bow, plated with heavy Silver	18 00	"	"
Five Bow, plated with heavy Silver	24 00	"	"

The improvements which have been made in Slat Irons meets with the approval of all carriage makers. As shown in the cut, the middle bow is made with a heavy head and wide bearing for the seat iron, while the neck is very much strengthened, and prevents the Slat Iron from breaking at the head, where the most strain comes, and adds greatly to its durability.

They are made from the best Norway Iron.

FORGED SLAT IRONS.

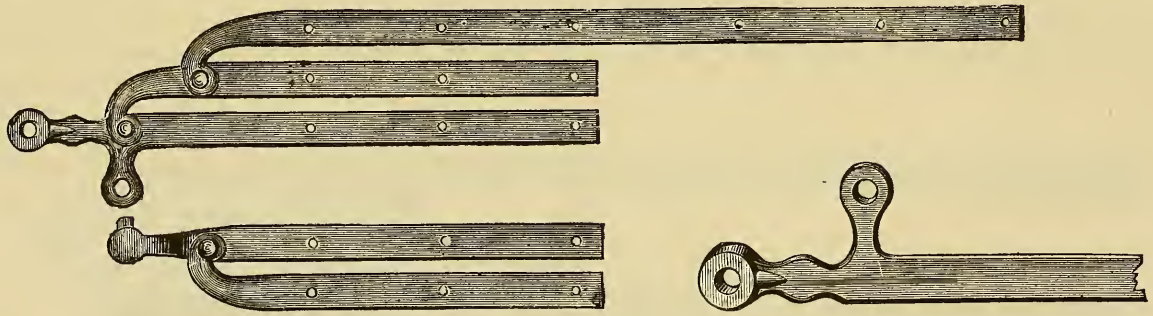


Philadelphia Pattern, Improved, with Two Long Bows.

Four Bow	$ 8 50	per dozen	sets.
Five Bow	10 50	"	"
Six Bow	12 50	"	"
Four Bow, Plated with heavy Silver	19 00	"	"
Five Bow, Plated with heavy Silver	25 00	"	"

These Slat Irons are made in same manner as the one long Bow, of the best Norway Iron, with the improved heavy bearing on the middle Bow iron, the two long Bows increasing the strength of the front, as well as of the back Bow.

FORGED SLAT IRONS.

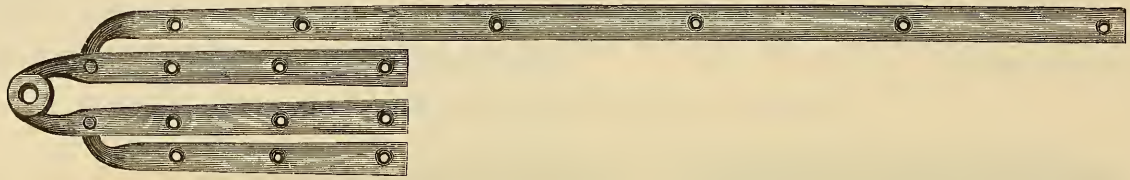


Extension Top Philadelphia Pattern, Improved.

Four Bow, Extension Top	$15 00	per dozen sets.
Five Bow, Extension Top	16 50	" "
Six Bow, Extension Top	20 00	" "

The above Bow Irons are made heavy, of the best Norway Iron, expressly for Extension Top Carriages, and are considered a very desirable pattern.

OVAL FORGED SLAT IRONS.



New York Pattern.

Four Bow	$15 00	per dozen sets.
Four Bow, extra light	15 00	" "
Four Bow, plated with heavy Silver	28 00	" "
Extra for two long Bows	2 00	" "

The above are made of the best material, of an extra finish, and are designed to fit on the outside of the Bow, without a pocket.

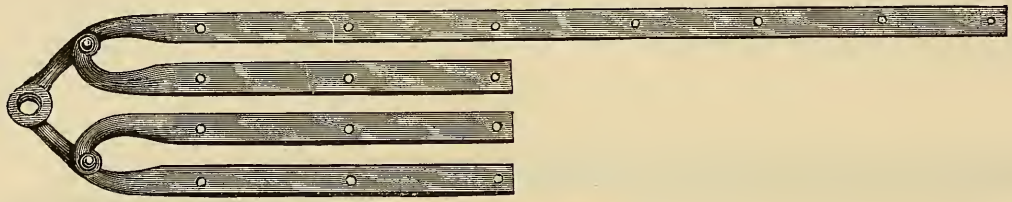
They are made with an oval face their entire length, to give a good finish to the Bow when covered with leather, and the holes are countersunk ready for use.

THE BEECHER OVAL FORGED SLAT IRON.

New York Pattern.

Four Bows, with two long Bows.....$12 00 per dozen sets.

FORGED SLAT IRONS.



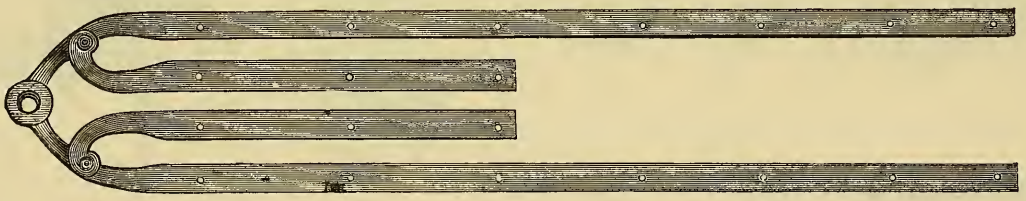
Albany Pattern.

Four Bow	$ 7 50	per dozen sets.
Five Bow	9 50	" "
Four Bow, Silver Plated	22 00	" "
Five Bow Silver Plated	27 00	" "

The above is a new Slat Iron, designed to combine lightness with strength. The two outside Bows, which take the greatest strain, are in this pattern of Slat Iron directly connected with the Seat Bolt, and do not, as in other Slats, bring the greatest strain to bear on the rivet.

Are forged from the best Norway Iron, and made with a flat surface. Can be used either inside or outside the Bow.

FORGED SLAT IRONS.



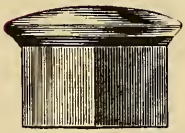
Albany Pattern, with Two Long Bows.

Four Bow	$ 8 50	per dozen sets.
Five Bow	10 50	" "
Four Bow, Silver Plated	24 00	" "
Five Bow, Silver Plated	28 00	" "

These Slat Irons are made in the same manner as the one long bow, but with the two long bows increases the strength of the front as well as the back bow.

TOP PROP NUTS AND RIVETS.

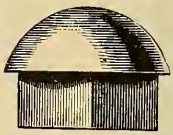
PRICE PER GROSS.



Malleable Iron.

No. 2 Nut.

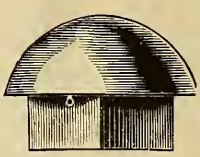
Silver Capped.... $5 00
Gold " 7 00



Composition.

No. 3 Nut.

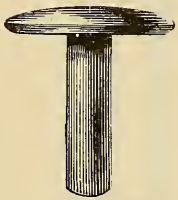
Electro Silver.... $10 50
Gold Plated 12 50



Malleable Iron.

No. 4 Nut.

Silver Capped.... $7 50
Gold " 9 50



No. 2 Rivet.

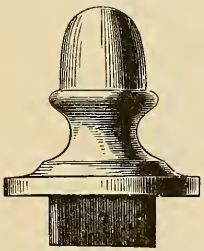
Silver Capped.... $3 00
Gold " 5 00

No. 3 Rivet.

Electro Silver.... $10 00
Gold Plated 12 00

No. 4 Rivet.

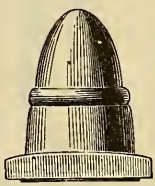
Silver Capped.... $7 00
Gold " 9 00



No. 5.

Solid

Composition.



No. 6.

Nut and Rivet are Alike.

Electro Silver..... $12 00
Gold Plated 14 50

Electro Silver..... $11 50
Gold Plated 14 00

In ordering, always state what Prop the Nuts are intended for.

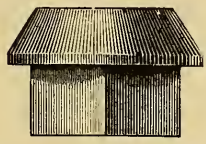
TOP PROP NUTS AND RIVETS.

PRICE PER GROSS.

Composition.

No. 7 NUT.

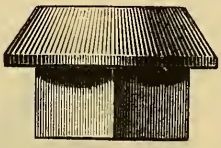
Electro Silver....$10 50
Gold Plated..... 12 50



Malleable Iron.

No. 8 NUT.

Silver Capped.... $7 50
Gold " 9 50



Composition.

No. 9 NUT.

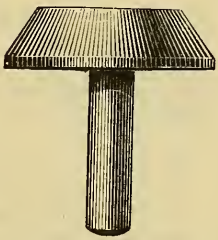
Electro Silver.... $13 00
Gold Plated 15 50

No. 7 RIVET.

Electro Silver.... $10 00
Gold Plated..... 12 00

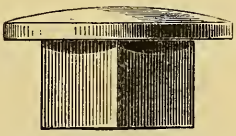
No. 8 RIVET.

Silver Capped.... $7 00
Gold " 9 00



No. 9 RIVET.

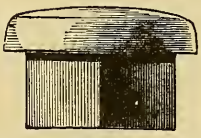
Electro Silver.... $13 00
Gold Plated 15 50



Composition.

No. 10 NUT.

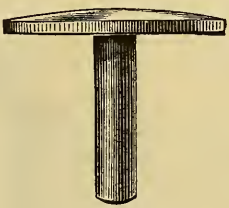
Electro Silver..... $12 00
Gold Plated..... 14 50



Composition.

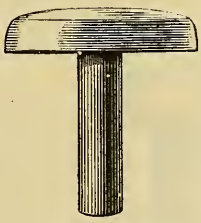
No. 11 NUT.

Electro Silver..... $12 00
Gold Plated..... 14 50



No. 10 RIVET.

Electro Silver..... $12 00
Gold Plated..... 14 50



No. 11 RIVET.

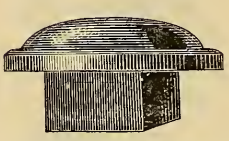
Electro Silver..... $12 00
Gold Plated..... 14 50

In ordering always state what Prop the Nuts are intended for.

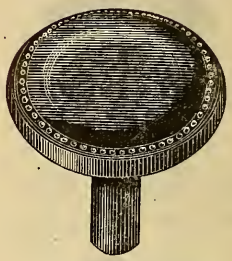
TOP PROP NUTS AND RIVETS.

PRICE PER GROSS.

SOFT RUBBER PROP-NUT.
Front View.



SOFT RUBBER PROP-NUT.
Side View.



SOFT RUBBER RIVET.

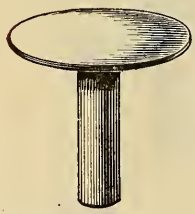
No. 1.	$\frac{5}{16}$ in. for Malleable Props	$18 00
2.	$\frac{3}{8}$ " " "	18 00
3.	$\frac{7}{16}$ " " "	18 00
4.	$\frac{7}{16}$ " Thomas' Wrought Props	18 00

Above are being used extensively, are very rich in appearance, and are adapted for nice work. They are moulded to imitate patent leather.

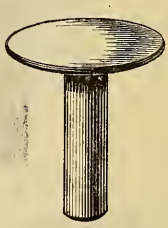
MISCELLANEOUS.

Close Silver Plate	$12 00
Gold Plated	15 00

Above are intended to be used with various styles of Nuts.



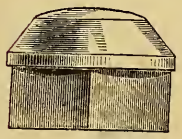
Malleable Iron.



Diameter of Top	$\frac{7}{8}$	1	$1\frac{1}{4}$ in.
Price per Gross	$1 10	1 30	1 70

TOP PROP NUTS.

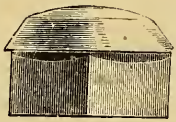
PRICE PER GROSS.



No. 12.

⅞ OR 1 IN. CAP.

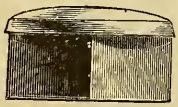
Silver Capped	$12 00
Oroide "	12 00
Gold Plated	15 00



No. 13.

⅞ OR 1 IN. CAP.

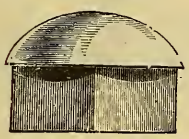
Silver Capped	$12 00
Oroide "	12 00
Gold Plated	15 00



No. 14. Oval.

⅞ OR 1 IN. CAP.

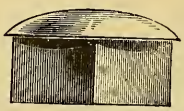
Silver Capped	$12 00
Oroide "	12 00
Gold Plated	15 00



No. 15.
Full Bull's Eye.

⅞ OR 1 IN. CAP.

Silver Capped	$12 00
Oroide "	12 00
Gold Plated	15 00



No. 16.
Shallow Bull's Eye.

⅞ OR 1 IN. CAP.

Silver Capped	$12 00
Oroide "	12 00
Gold Plated	15 00

No. 17.
Square Cap.

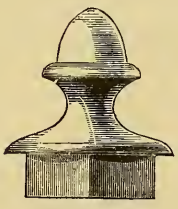
⅞ OR 1 IN. CAP.

Silver Capped	$12 00
Oroide "	12 00
Gold Plated	15 00

No. 18.
Embossed Silver Shell.

⅞ OR 1 IN. CAP.

Silver Capped	$12 00
Oroide "	12 00
Gold Plated	18 00



No. 19.
Boston Acorn.

⅞ OR 1 IN. CAP.

Silver Capped	$12 00
Oroide "	12 00
Gold Plated	18 00

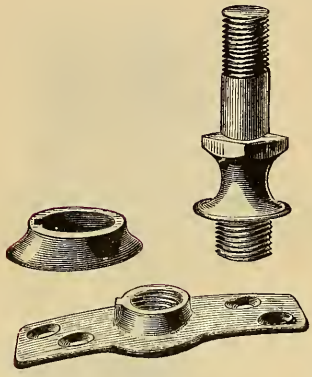
In ordering, state whether Nuts are wanted to fit $\frac{7}{16}$ in. shank for our malleable Props or $\frac{3}{8}$ in. shank for our wrought iron Props. By so doing, errors and unnecessary delay will be avoided.

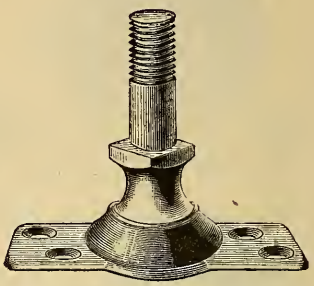
The above Prop Nuts are a thick forged nut, which are capped in a superior manner with solid caps, of extra silvered metal for Smith's and Thomas' Patent Top Props.

As the only means of securing a rivet that can uniformly be depended upon, we send with all kinds of Top Props a forged Norway Iron Joint Rivet, heavily close plated, unless otherwise ordered.

Gold Plated Nuts and Rivets furnished to order.

SALADEE'S TOP PROPS.





Saladee's Patent.

With Nuts and Rivets complete.

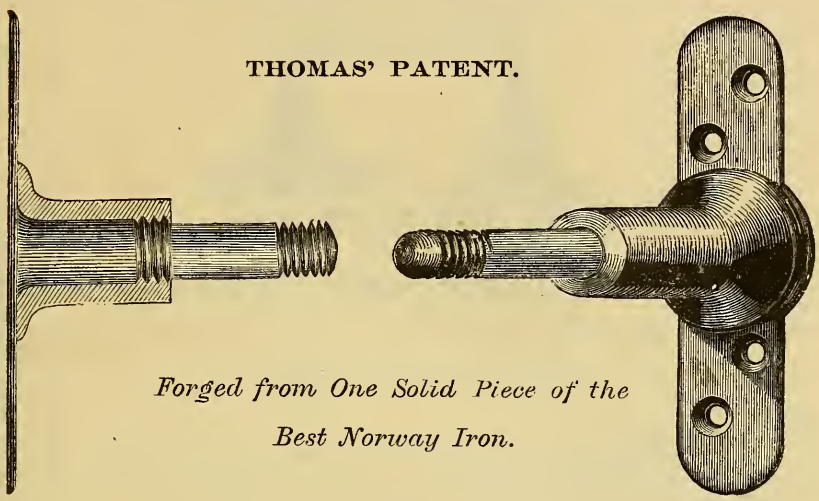
No. 2.	Silver Capped Nuts and Rivets	$ 70 per set.
2.	" " Solid Nuts and Rivets	75 "
2.	Gold " " " "	95 "
3.	Solid Composition, Silver Plated	1 15 "
3.	" " Gold "	1 35 "
4.	Solid Iron, Silver Capped	1 00 "
4.	" " Gold "	1 20 "
5.	Solid Composition, Silver Plated	1 35 "
5.	" " Gold "	1 55 "
6.	" " Silver "	1 30 "
6.	" " Gold "	1 50 "
7.	" " Silver "	1 15 "
7.	" " Gold "	1 35 "
8.	Solid Iron, Silver Plated	1 00 "
8.	" " Gold "	1 20 "
9.	Solid Composition, Extra Large, Silver Plated	1 45 "
9.	" " " " Gold "	1 65 "
10.	" " Silver Plated	1 35 "
10.	" " Gold "	1 55 "
11.	" " Silver "	1 35 "
11.	" " Gold "	1 55 "

The advantage to the trimmer in using this Top Prop consists in the fact that the Base of the Prop is fastened on the Bow, then covered and the Stem of the Prop screwed into the Base, obviating the necessity of stretching the Leather over the Stem of the Prop. See Illustrations of Plated Nuts and Rivets.

Without Nuts or Rivets, price 42 cents per set.

WROUGHT IRON TOP PROPS.

THOMAS' PATENT.



Forged from One Solid Piece of the Best Norway Iron.

No. 12.	Nuts (spun), ⅞ or 1 in. Caps, Close Plate Rivets	$1 45	per set.
13.	" " " " "	1 45	"
14.	" " " " "	1 45	"
15.	" " " " "	1 45	"
16.	" " " " "	1 45	"
17.	" ⅝ or ¾ in. " " "	1 45	"
18.	Nuts, with Rivets Capped to match "	1 75	"
19.	" (Spun) " " "	2 00	"
Iron Nuts, without Caps or Rivets		90	"
Wrought Props, without Nuts or Rivets		70	"

Packed in Boxes of 4 Sets each.

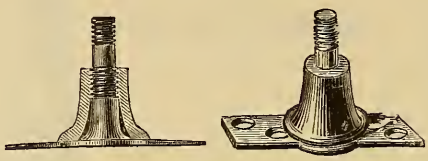
See Illustrations of Plated Nuts and Rivets.

The Thomas Patent, which was the first issued on Top Props in this country, has recently been complimented by an extension for seven years.

The unequaled merits of this Prop are so universally known and admitted, that nothing need be said in its favor, unless it be that it is now made from one solid piece of the best Norway Iron.

MALLEABLE IRON TOP PROPS.

THOMAS' PATENT.



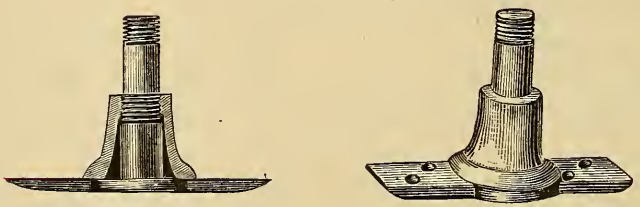
Buggy Pattern.

		PER SET
No. 12.	Nuts (spun), ⅞ or 1 in. Caps, with Norway Iron Close Plate Rivets,	$1 30
13.	" " " " "	1 30
14.	" " " " "	1 30
15.	" " " " "	1 30
16.	" " " " "	1 30
17.	Nuts ⅝ or ¾ in. " " "	1 30
18.	Nuts with Norway Iron Rivets capped to match Nuts	1 60
19.	Nuts (spun) with Norway Iron Rivets capped to match Nuts	1 85
Iron Nuts without Cap or Rivets		75
Props without Nuts or Rivets		56

Packed in Boxes of 4 Sets each.

See Illustrations of Plated Nuts and Rivets.

THOMAS' PATENT.



Chaise Pattern.

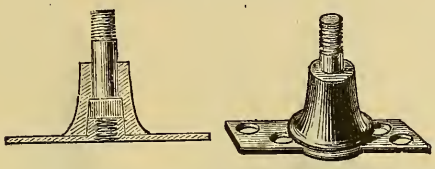
Chaise Pattern, without Nuts ..... $1 00 per set
Chaise Pattern with Forged Iron Nuts ..... 1 25 "

Chaise Pattern Props have a shank ½ inch in diameter, and are made for a heavier class of work than the Buggy Pattern is designed for

Extra Silver or Gold Plated Nuts and Rivets suitable for these Props furnished to order

IMPROVED TOP PROPS.

SMITH'S PATENT.



Buggy Pattern.

MADE UNDER SAWYER'S PATENT OF MAY 15, 1866, AND THE EXTENSION OF THE THOMAS' PATENT, SEPT. 22, 1871.

		PER SET.
No. 12.	Nuts (spun), ⅞ or 1 in. Caps, with Norway Iron Close Plate Rivets,	$1 35
13.	" " " " "	1 35
14	" " " " "	1 35
15.	" " " " "	1 35
16.	" " " " "	1 35
17.	Nuts ⅝ or ¾ in. " " "	1 35
18.	With Norway Iron Rivets Capped to match Nuts	1 65
19.	(Spun) " " " "	1 90
Iron Nuts without Rivets		80
Props without Nuts or Rivets		60

Packed in Boxes of 4 Sets each.

See Illustrations of Patent Nuts and Rivets.

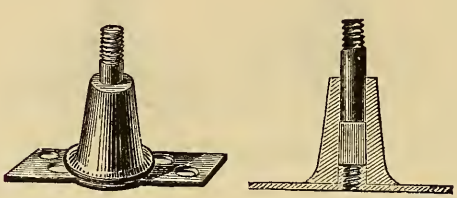
The Smith Top Props have a wrought iron shank that screws into the plate of the Prop, which has a square raised upon it about ⅜ of an inch, corresponding to the square on the shank.

The square in the collar, fitting over the square on the shank and plate, keeps the collar from turning, and makes it impossible for the shank to unscrew, or work loose, which it is liable to do when a shank is round in the collar and screwed into the plate.

This improvement will facilitate fitting the leather over the Prop.

IMPROVED TOP PROPS.

SMITH'S PATENT.



Philadelphia Pattern.

MADE UNDER SAWYER'S PATENT OF MAY 15, 1866, AND THE EXTENSION OF THE THOMAS PATENT, SEPTEMBER 22, 1871.

		PER SET.
No. 12.	Nuts (Spun), ⅞ or 1 in. Caps, with Norway Iron Close Plate Rivets,	$1 45
13.	" " " " " "	1 45
14.	" " " " " "	1 45
15.	" " " " " "	1 45
16.	" " " " " "	1 45
17.	" ⅝ or ¾ in. " " " "	1 45
18.	Nuts with Norway Iron Rivets capped to match Nuts	1 75
19.	" (Spun) " " "	2 00
Iron Nuts without Rivets		70
Props without Nuts or Rivets		87

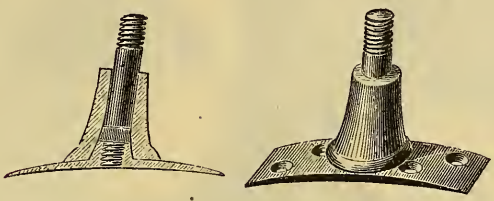
Packed in Boxes of 4 Sets each.

See Illustrations of Plated Nuts and Rivets.

The above Prop is the same as the Smith's Prop described on the preceding page, except that it is made with a longer shank and collar, to meet the wants of those wishing to throw the joints further out from the carriage top, than will the Buggy Pattern, and by this improvement the leather can be fitted over a long or short shank, neatly and easily.

IMPROVED TOP PROPS.

SMITH'S PATENT.



Curved Pattern.

MADE UNDER SAWYER'S PATENT OF MAY 15, 1866, AND THE EXTENSION OF THE THOMAS PATENT, SEPT. 22, 1871.

		PER SET.
No. 12.	Nuts (spun), ⅞ or 1 in. Caps, with Norway Iron Close Plate Rivets,	$1 35
13.	" " " " "	1 35
14.	" " " " "	1 35
15	" " " " "	1 35
16.	" " " " "	1 35
17.	Nuts ⅝ or ¾ in. " " "	1 35
18.	With Norway Iron Rivets capped to match Nuts	1 65
19.	(Spun) " " "	1 90
Iron Nuts without Rivets		80
Props without Nuts or Rivets		60

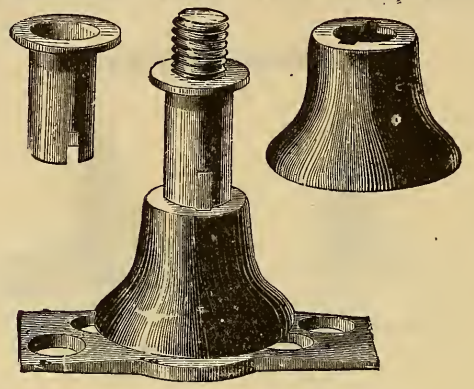
Packed in Boxes of 4 Sets each.

See Illustrations of Plated Nuts and Rivets.

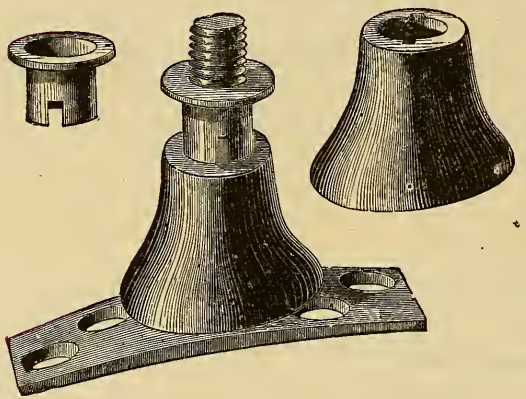
The Curved Pattern is made on the same principle as Smith's Prop described as his Buggy Pattern, except that the plates of the front Prop irons are bent on a curve to fit the upper part of the carriage bow, and the shank and collar do not stand at right angles with the plate, but obliquely.

This Prop is designed to facilitate placing the Prop iron higher up on the carriage top.

BRADLEY'S PATENT TOP PROPS.



Back Bow Prop Iron, Complete.



Front Bow Prop Iron, Complete.

	PER SET.
With best Silver Bull's Eye Nuts and Silver Solid filled Rivets	$1 45
With best Silver Bevel Edge Nuts and Silver Solid filled Rivets	1 45
With best Silver "Brewster Pattern," Solid filled Nuts and Rivets	1 60
Without Nuts and Rivets (as shown in cuts)	56

Packed in Boxes of 4 Sets each.

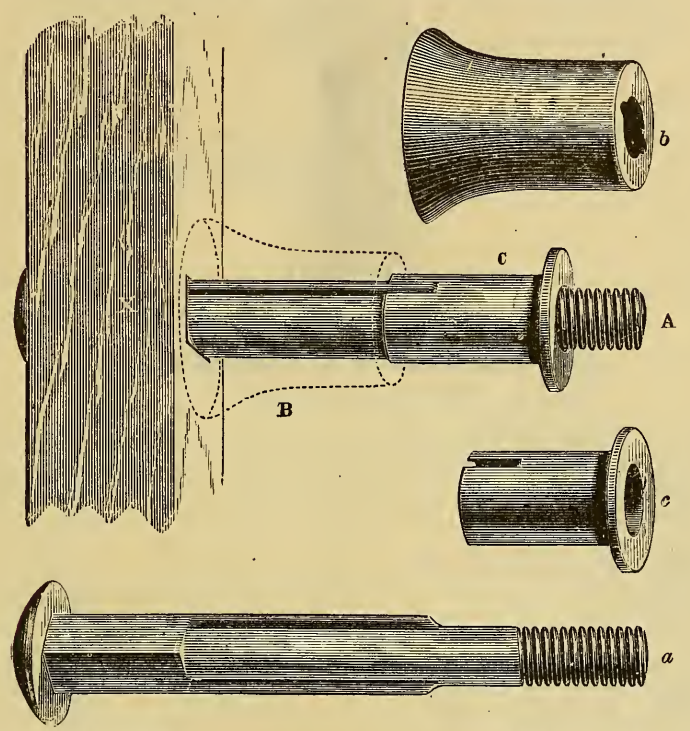
The above cuts will readily explain the construction of this new and improved Top Prop. The chief novelty therein consists of using Brass tube washers, upon which the joint eyes rest, and by which all friction against the nuts whereby they are worked off, as in other Props, is prevented; and also in conforming to shape of Bow.

N. B.—The base of this Prop is intended to go under the Leather. In fitting the joints, the Blacksmith will find it more convenient to reverse the tube washer.

KIMBALL'S PATENT TOP PROP,

IN COMBINATION WITH THE

BRADLEY'S PATENT TUBE WASHER.



TOP PROP IN POSITION.

A.—Norway Bolt—passed through bolt.
B.—Iron Collar—outlined.
C.—Pat. Tube Washer—(Back Bow.)

PARTS DISCONNECTED.

a.—Norway Iron Bolt—exact size.
b.—Japanned Iron Collar—exact size.
c.—Pat. Brass Tube Washer—exact size for [Back Bow

X.—Section of a Carriage Bow.

Showing Method in Use.

With best Solid Filled Bull's Eye Nuts and Rivets	$1 25	per set.
With best Solid Filled Bevel Edge Nuts and Rivets	1 25	"
With best Solid Filled Brewster Pattern Nuts and Rivets	1 25	"
Above with Plain Oval Norway Rivets, less	25	"
With Four Plain Iron Square Nuts and Oval Rivets	56	"

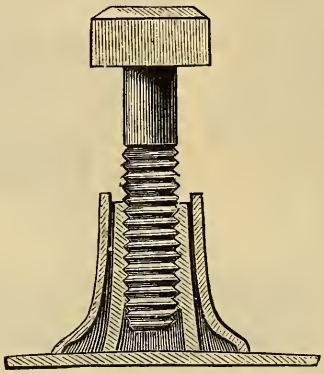
N. B.—The same sized Bolt is used as in the old Kimball Patent Prop.

The combination with the Bradley Tube Washer prevents all friction of joint ends against the nuts, whereby they were turned off when made with the plain Props, as formerly. The Bolt is forged of Norway Iron, and the Japanned Collars are faced to size uniform with our Joint Ends.

DIRECTIONS FOR USING.—Apply them after the top is trimmed, having first bored a hole with a $\frac{5}{16}$ Auger Bit through the Bow, put the Bolt through the Lining Bow and leather, squaring it with the Bow, then slip on the Iron Collar, Joint Ends and Tube Washer, screw on the Nut, and it is complete.

Packed in Boxes of 4 Sets each.

COMBINATION TOP PROPS.



With Capped Bolts and Rivets Complete.

Silver, with Square Caps and Rivets,		¾ in	$1 25	per set.
Oroide,	"	" " ¾	1 25	"
Nickel,	"	" " ¾	1 35	"
Gold,	"	" " ¾	1 60	"
Silver,	"	" " ⅞	1 45	"
Oroide,	"	" " ⅞	1 45	"
Nickel,	"	" " ⅞	1 50	"
Gold,	"	" " ⅞	1 80	"
Silver, with Nos. 14, 15, 16 and 17,		1	1 25	"
Oroide,	"	" " 1	1 25	"
Nickel,	"	" " 1	1 35	"
Gold,	"	" " 1	1 60	"
Silver,	"	" " 1⅛	1 45	"
Oroide,	"	" " 1⅛	1 45	"
Nickel,	"	" " 1⅛	1 50	"
Gold,	"	" " 1⅛	1 80	"
Silver,	"	" " 1¼	1 70	"
Oroide,	"	" " 1¼	1 70	"
Nickel,	"	" " 1¼	1 75	"
Gold,	"	" " 1¼	2 10	"

Packed in Boxes of 6 Sets each.

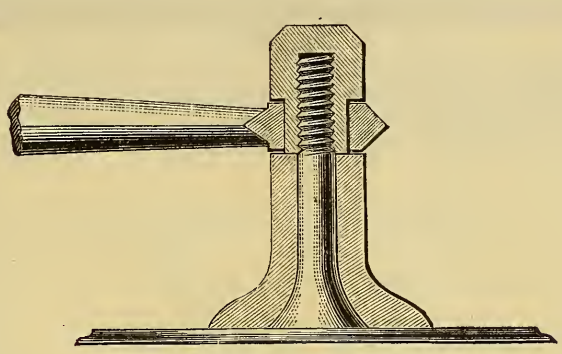
EXTENSION TOP PROPS.

Comprising 4 Long, 2 Short, 6 Rivets, 2 Nuts ..... 50 per cent. advance.
" 6 " 2 " 6 " 4 " .....100 " "

In ordering always state the style and kind desired for your work.

EXCELSIOR

WROUGHT IRON TOP PROP.



PATENTED OCT. 5, 1875.

This cut gives a sectional view of the nut, thimble and joint end on the Prop Iron, which is shown in full. We offer the Excelsior Prop as the latest improvement on Props for carriages. The Prop Iron and Nuts are of Norway Iron, and finished to exact fit and sizes. The thimble is of malleable iron and japanned.

This newly patented Top Prop does away with the frequent losing of prop nuts and the difficulty experienced in most makes of matching and replacing nuts lost or too poor to keep on with safety.

The improvement consists in a nut so constructed with sleeve passing through the joint ends, that when the end of the nut is screwed up against the ferrule a sufficient space is left for the joint ends to turn without strain on the nut or loosening it. When the thickness of the top leather is added the space for the joint end is not affected, the nut always working to the shoulder.

Excelsior Props, solid, oval or bevel nuts, Japanned	$0 75	per set.
" " " " " Silver Plated	1 12	"
" " " " " Gold "	1 88	"

Packed 4 Sets in a Box, with the extra nuts in the usual way.

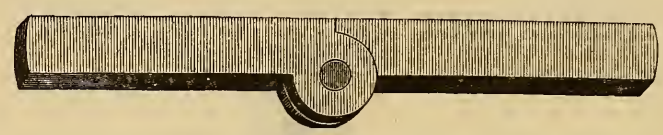
EXCELSIOR PROPS WITH JOINT ENDS.

With Short Joint Ends, solid, oval or bevel nuts, Japanned	$1 24	per set.
" " " " " Silver Plated	1 60	"

Packed 3 Sets in a Box, with extra nuts in the usual way.

The eight Joint Ends will be exactly what the Props need, and in this way the buyer always gets the Props and Ends a perfect fit.

STUMP JOINTS.



Made of the Best Ulster Iron.

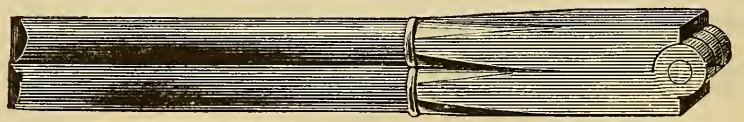
WARRANTED EQUAL TO ANY JOINT NOW MADE.

1/2 × 1/2 in.	$1 55	per dozen.
9/16 × 1/2	1 65	"
9/16 × 9/16	1 75	"
5/8 × 3/8	1 75	"
5/8 × 7/16	1 75	"
5/8 × 1/2	1 75	"
5/8 × 5/8	2 00	"
3/4 × 1/2	3 12	"
3/4 × 5/8	3 50	"
3/4 × 3/4	4 00	"
7/8 × 1/2 in.	$ 5 75	per dozen.
7/8 × 5/8	6 12	"
1 × 1/2	6 37	"
1 × 5/8	7 12	"
1 1/8 × 1/2	7 87	"
1 1/8 × 5/8	8 62	"
1 1/4 × 1/2	10 00	"
1 1/4 × 5/8	10 50	"
1 1/2 × 1/2	11 50	"
1 1/2 × 5/8	12 50	"

Packed in Boxes of 1 Doz. each.

Above Joints are ground exact to size, and when open measure full six inches in length. The method of forging these Joints is such as to preserve the greatest possible strength and stiffness of the iron.

PLATED STUMP JOINTS.



Without Plate.

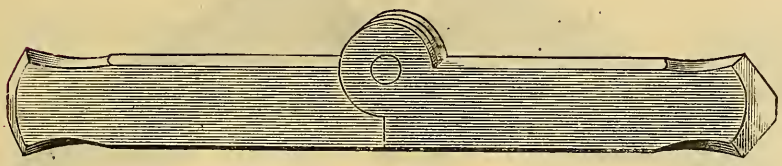
1/2 in.	$1 60	per set.
9/16	1 75	"
5/8	2 00	"

Plated with Heavy Silver Plate.

1/2 in.	$3 00	per set.
9/16	3 25	"
5/8	3 50	"

Each Joint is about 18 inches long, with Oval Iron.

STUMP JOINTS.



Stump Joint with Stub to Weld.

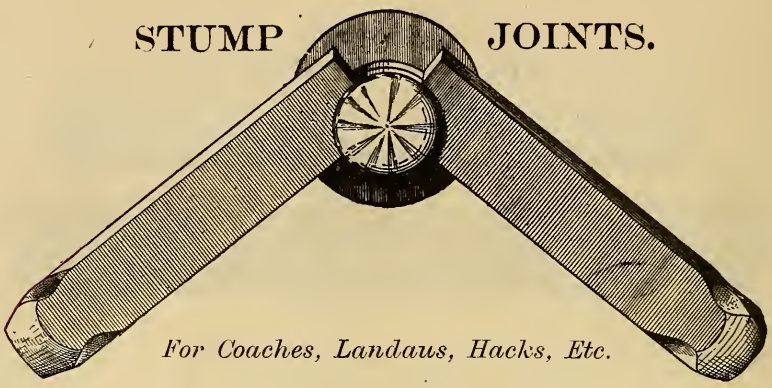
MADE OF LOWMOOR IRON.

No. 1. FULL MILLED.			No. 2. MILLED ON TWO SIDES.		
1/2 × 3/8 in.	$2 10	per dozen.	1/2 × 3/8 in.	$1 55	per dozen.
1/2 × 1/2	2 10	"	1/2 × 1/2	1 55	"
9/16 × 1/2	2 25	"	9/16 × 1/2	1 65	"
9/16 × 9/16	2 35	"	9/16 × 9/16	1 75	"
5/8 × 3/8	2 60	"	5/8 × 3/8	1 75	"
5/8 × 7/16	2 60	"	5/8 × 7/16	1 75	"
5/8 × 1/2	2 60	"	5/8 × 1/2	1 87	"
5/8 × 5/8	2 60	"	5/8 × 5/8	2 00	"
3/4 × 1/2	5 00	"	3/4 × 1/2	3 38	"
3/4 × 5/8	5 00	"	3/4 × 5/8	3 87	"
3/4 × 3/4	7 50	"	3/4 × 3/4	6 25	"

Put up in paper Boxes of 1 Doz. each.

Above illustration shows an improved pattern, made with care, at a price that comes within the reach of all desiring a good reliable Joint. Both numbers are made from same grade of iron, differing only in the outside finish; are full measure, exact and uniform. Are forged under heavy drops, making them very stiff and firm, and always ready for welding, as the ends are left so as to take the heat without damaging the milled parts.

STUMP JOINTS.



For Coaches, Landaus, Hacks, Etc.

No. 1. Full Milled.		No. 2. Half Milled.	
⅞ × ½ in.	$6 50 per dozen.	⅞ × ½ in.	$6 00 per dozen.
⅞ × ⅝	7 50 "	⅞ × ⅝	6 50 "
1 × ½	10 00 "	1 × ½	7 50 "
1 × ⅝	12 00 "	1 × ⅝	8 50 "
1⅛ × ½	12 00 "	1⅛ × ½	9 00 "
1⅛ × ⅝	14 00 "	1⅛ × ⅝	10 00 "

We put the large rivet with back washer in without extra charge when orders read " to be filled with rivets and washers;" otherwise they are riveted in the usual manner.

FORGED SLAT IRON HOLDERS.

Without Nuts.

⅜, $\frac{7}{16}$ and ½ in. shoulder ..... $1 25 per dozen.

To weld to seat rail, with thread cut like axle nut and exact size to take eye of Slat Iron.

BACK JOINT HOLDERS.

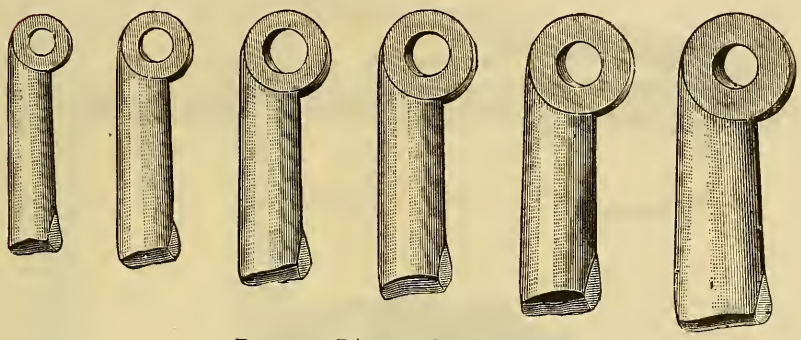
Without Nuts.

$\frac{9}{16}$ inch square ..... $1 00 per dozen.

Thread cut ready to put on joint and prop nut. One Doz. in a Box.

SHORT JOINT ENDS.

NORWAY IRON.



Put up in Boxes of Six Sets each.

No. 1.	Round,	7/16	in. hole,	7/16	in. iron	per set of	8	pieces,	56	cents.
1.	"	13/32	"	7/16	"	" "	8	"	56	"
2.	Oval,	7/16	"	5/8	"	" "	8	"	56	"
2.	"	13/32	"	5/8	"	" "	8	"	56	"
3.	"	7/16	"	3/4	"	" "	8	"	62	"
4.	"	7/16	"	3/4	"	" "	8	"	72	"
5.	"	7/16	"	7/8	"	" "	8	"	84	"
6.	"	7/16	"	1	"	" "	8	"	96	"

Joint Ends can be furnished with any size of hole desired.

Above Joint Ends are forged from the best Norway Iron with milled sides.

Can furnish either Oval or Round.

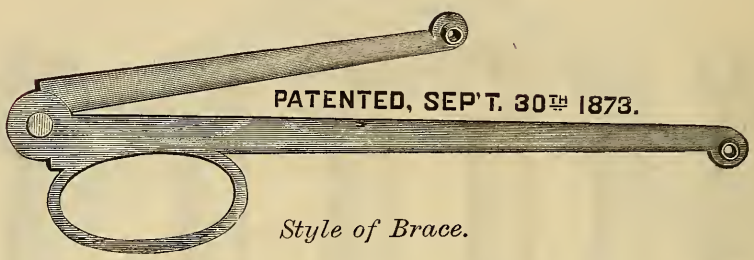
LONG JOINT ENDS.

Oval, 7/16, 13/32 and 3/8 in. hole, 9/16 or 5/8 in. iron ..... per set, 75 cents.

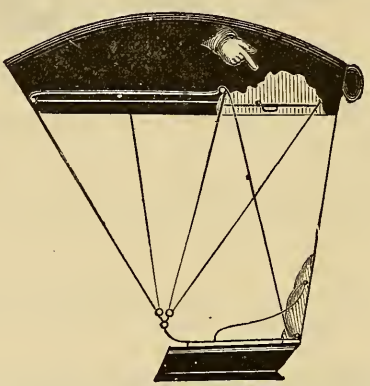
Round, 7/16, 13/32 " 3/8 " 7/16 in. iron ..... " 75 "

These are complete for use, and put up in a manner most convenient. The above cut represents them as wired and labeled, ready for market.

CONCEALED JOINTED TOP BRACE.



Style of Brace.



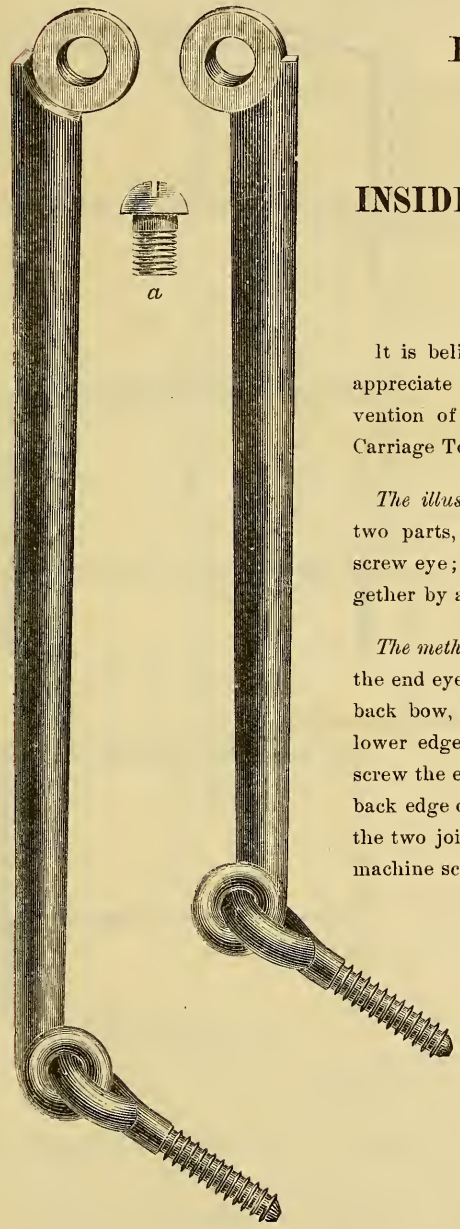
Showing Position of Brace in Use.

This is really a very valuable invention for saving Carriage Tops, and are used between the two back bows under the lining, to prevent the bows coming together when the top is let down; or they can be closed when required. They will take the strain off the back bow, keep it from springing, and enable the trimmer to make the top so it will not sag or get slack. They are a fine thing for Old Tops, as they take the wrinkles out of the leather and keep the top smooth and from wearing.

Use 11 in. for Small and Five Bow Tops; 12 in. for Common Size, and 13 in. for Phaeton and Large Tops.

Packed Six Pairs in a Box.

Price per Dozen Pairs $4 00



BRADLEY'S

ADJUSTABLE

INSIDE BACK BOW JOINTS.

PATENTED APRIL 28, 1874.

It is believed that every carriage maker will appreciate this simple arrangement for the prevention of the unsightly falling in of Leather Carriage Tops between the two back bows.

The illustration shows the joint separated in two parts, on the end of each of which is a screw eye; the joint, when in use, being held together by a machine screw.

The method of application is as follows: Screw the end eye of one piece into the front edge of the back bow, about an inch and a half above the lower edge of side valance, and in same manner screw the end eye of the remaining piece to the back edge of the next forward bow, then spring the two joint ends together and fasten with the machine screw.

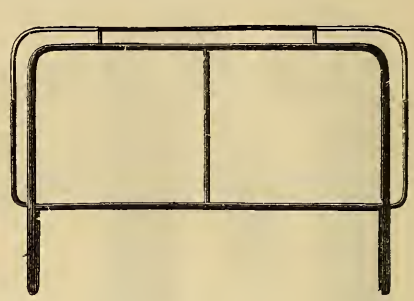
N. B.—These joints are out of sight, and when the top is dropped, fold inwards, and enable the leather to fold in. By means of the screw eyes, the length of the Joint may be lengthened or shortened as desired. Made of Wrought Iron.

Put up in Boxes of 1 Doz. sets.

$6 00 per dozen sets.

DASH FRAMES.

No. 100, in Halves.

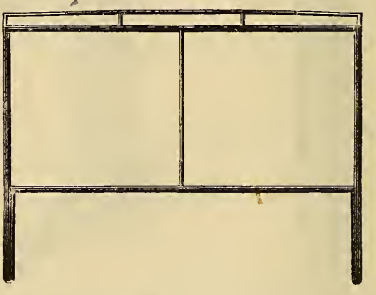


No. 100, Whole.

No. 200, in Halves.

No. 200, Whole.

No. 300, in Halves.



No. 300, Whole.

PER DOZEN.

In Halves, Plain.	Whole, Plain.	In Halves, Plated.	Whole Top Rail Plated.	Top Corner Plated.
No. 100---- $18 00	$22 00	$27 00	$44 00	$40 00
200---- 22 00	27 00	40 00	44 00	
300---- 18 00	25 00	27 00	40 00	

DASH FRAMES.

No. 3.

In Halves, plain ..... $18 00 per dozen.
Whole " ..... 20 00 "

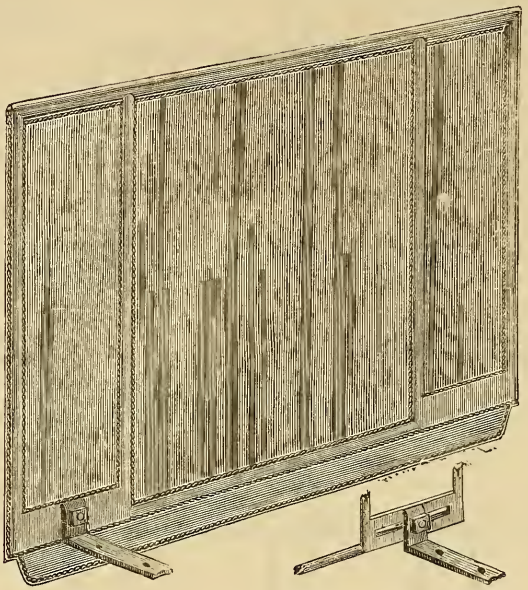
No. 4.

In Halves, plain ..... $20 00 per dozen.
Whole, " ..... 25 00 "

Above Dashes in parts or whole, are made with feet bent for deep bodies. The feet being forged solid from Norway Iron in patent dies, are much stronger and neater in appearance than those made in the usual way.

The angles are sharp and well defined, the ovals are perfect, and combine strength, durability and finish. The feet have an offset of one inch in order to throw the Dash flush with the front of body, and this offset can be readily lengthened or shortened by the blacksmith to fit any thickness of panel; and carriage makers desiring a first-class Dash Frame, at a reasonably low price, would do well to try them.

ADJUSTABLE LEATHER DASH.



[PAT. ADJUSTABLE FOOT.]

Peters' Patent.

PRICE LIST.

FOR PIANO BOX BODIES.

Dashes	24	in. long,	11	in. high	$48 00	per dozen.
"	27	"	11	"	48 00	"
"	30	"	11	"	51 00	"
"	33	"	11	"	54 00	"
"	36	"	11	"	57 00	"

FOR LOW OR BRACKET FRONT BODIES.

Dashes	24	in. long,	15	in. high	$54 00	per dozen.
"	27	"	15	"	54 00	"
"	30	"	15	"	60 00	"
"	33	"	15	"	63 00	"
"	36	"	15	"	66 00	"

Forged Norway Iron Feet, 25 cents per pair, including best Norway Iron Bolts. These Feet can be bent or fitted *cold* to suit any shaped body.

(SEE OPPOSITE PAGE.)

ADJUSTABLE LEATHER DASH.

PETERS' PATENT.

DIRECTIONS FOR ATTACHING DASH TO BODY.

First, place the Dash in position in front of the body, then pass a large awl through the bolt-holes in the feet, and through the Dash leather and slot; then pass the bolt through, with the head outside, and screw up the nut very tight. The smooth side of the stitching should face the horse, as it is the outside of the Dash.

The Patent Adjustable Feet for Piano and Coal Box Bodies can be procured and bolted fast to the body at any point desired before painting, so that the feet can be painted at same time with the body. Always be careful to plumb the front face of the feet, so that the Dash, when bolted fast, will stand perfectly erect or perpendicular.

REGULAR SIZES.

We shall keep in stock the five sizes embracing all sizes of bodies from 21 inches to 3 feet wide (inclusive), and only two heights—one for low front or Coal Box, and one for high front or Piano Box bodies.

The lengths are measured from outside to outside—24 inches, 27 inches, 30 inches, 33 inches and 36 inches. The heights are 15 inches for low front bodies, and 11 inches for high front Piano bodies, measuring from the top edge of the body to the top of the Dash.

Below are the figures showing how each size may be adjusted till it reaches the next smaller size:

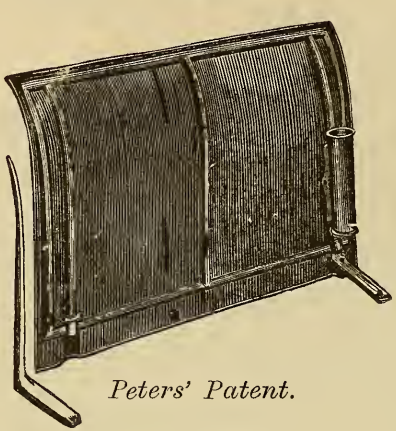
A 24 in.	will fit a	body	from	24	in. to	21	in.
A 27	"	"	"	27	"	24	"
A 30	"	"	"	30	"	27	"
A 33	"	"	"	33	"	30	"
A 36	"	"	"	36	"	33	"

In ordering, give the length and height of Dash as here described.

☞ *No other sizes made except as above, unless in lots of four dozen of each size.*

Just what every carriage maker needs to facilitate getting out work rapidly. A grand thing for repairing old work. A new Dash cheaper than you can re-cover the old frame.

ADJUSTABLE SHEET IRON DASH.



Peters' Patent.

PRICE LIST.

All sizes ..... $42 00 per dozen.

Feet made of best malleable iron can be furnished at an extra cost of 30 cents per pair; or they can be furnished forged from best Norway Iron at an extra cost of 75 cents per pair.

SIZES OF DASHES.

LENGTH FROM END TO END.	LENGTH FROM CENTER TO CENTER OF FEET.	HEIGHT.
24 in.	19 in.	12 or 15 in.
25	20	12 " 15
26	21	12, 14 " 16
27	22	12 " 16
28	23	12, 14 " 16
29	24	12, 14 " 16
30	25	12, 14 " 16
31	26	12, 14 " 16
32	27	12, 14 " 16
33	28	12, 14 " 16
34	29	12, 14 " 16
35	30	12, 14 " 16
36	31	12, 14 " 16
37	32	12 " 16
38	33	12 " 16
39	34	12 " 16
40	35	12 " 16
41	36	12 " 16
42	37	12 " 16

In ordering Dashes, please state whether you mean extreme length, or from center to center of feet; also give the height of Dash wanted.

It is made of two sheets of light iron, with half-oval mouldings pressed into each sheet, which stiffens the metal and resembles the frame in the leather Dash.

A layer of packing is placed between the two sheets of iron, preventing them from coming in contact with each other, and makes rattling and rumbling impossible. The edges are turned over a wire from opposite directions, making a lock joint which binds together firmly the two sheets of iron. The upper extension of the dash feet should be wrapped with canvas and pressed up into the groove formed by the mouldings nearly to the top of Dash, then screw up tightly the clamps at each end, binding the feet to their places.

DASH MOULDINGS.

Fig. 1.

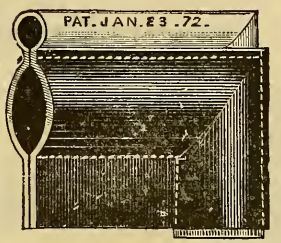


Fig. 3.

Curtis' Patent.

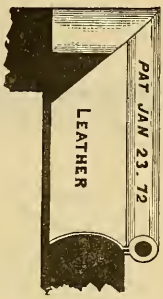


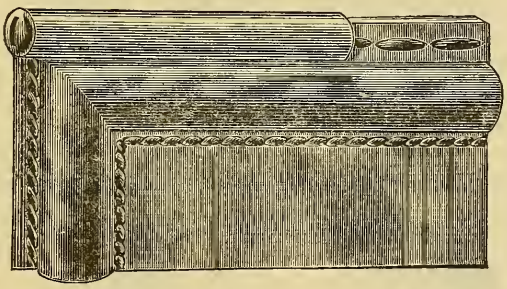
Fig. 2.

A New and Elegant Finish for the Tops of Dashes.

Fig. 1 represents the Moulding as it is furnished ready to put on. Fig. 2 represents the Leather pasted to the Dash Iron, and shows the metallic part turned down over the corner of the Dash Iron. Fig. 3 represents the Top Corner of a Dash with Rail on. The leather is pasted to the iron, the Moulding projecting above sufficient to let an awl pass between it and the iron; then the Dash is covered in the usual way. The finish in Fig. 2 is made by filing nearly through the Moulding, so as to cut through the case at each end of the Dash Iron; then turning the ends down at an angle as shown, and stitching the leather over it on side of Dash *at the top.*

Any length over 20, 22, 24, 26, 28, 30, 32, 34 and 36 in. is made to order.

Gold------ 6 cts. per in. Silver------ 5 cts. per in. Brass------ 4 cts. per in.



Peel's Patent I X L Moulding.

Cut in lengths from 20 in. to any length required.

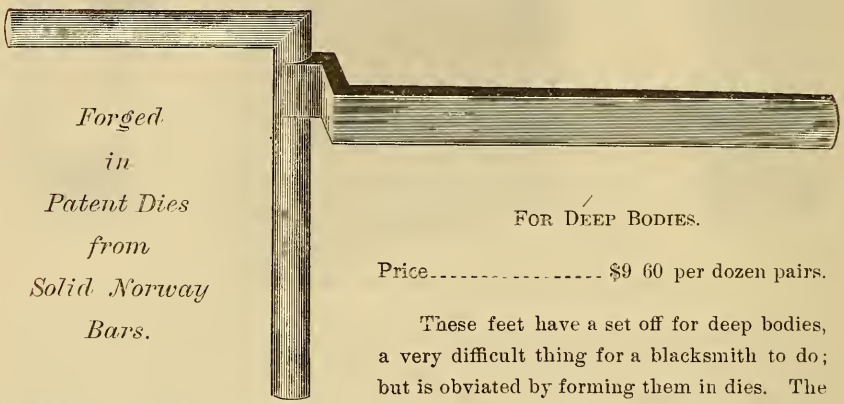
Gold, 7 cts. per in. Japanned, 4 cts. per in. Silver, No. 1, 5 cts.; No. 3, 3 cts. per in.

Process of Applying.—The outer row of stitching of Dash is done with heavy thread, these stitches projecting form a bead, over which the Moulding is slipped, and finished at each end with a round-headed screw.

It costs no more than the plating of the ordinary iron rail, and saves the expense of making rail. It saves time and trouble of sending Dashes away to be plated. It covers the edge of the leather and preserves the Dash. It can be applied in one-fourth of the time required for all similar Mouldings, and excels all others in beauty, finish and durability.

SEWARD'S

PATENT SOLID DASH FEET.



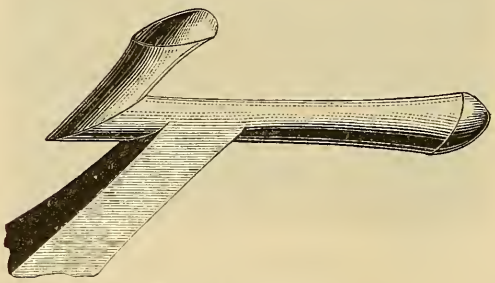
Forged in Patent Dies from Solid Norway Bars.

FOR DEEP BODIES.

Price..... $9 60 per dozen pairs.

These feet have a set off for deep bodies, a very difficult thing for a blacksmith to do; but is obviated by forming them in dies. The angles or corners are brought up sharp, the ovals are left long enough to weld to (being about six inches long). The cut represents the exact shape. The offset is made the usual length of one inch; but should parties require it longer or shorter, to fit panel, it can be readily drawn or upset by any blacksmith.

FORGED DASH FEET.



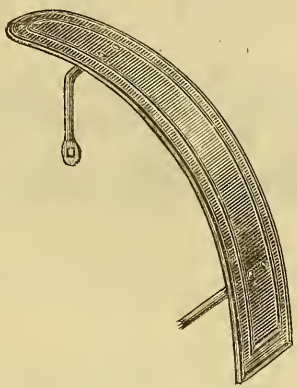
Auburn Pattern.

Price..... $5 00 per dozen pairs.

Above is a new and desirable article that will answer for ordinary sizes of iron for Dashes. The corners are very strong, and good starts for welding on to Dash iron; also plenty of foot stock to draw out and bend to fit bodies as desired.

These Dash Feet will undoubtedly meet a want long felt among Carriage Manufacturers.

SHEET IRON FENDER.



Ebert's Patent.

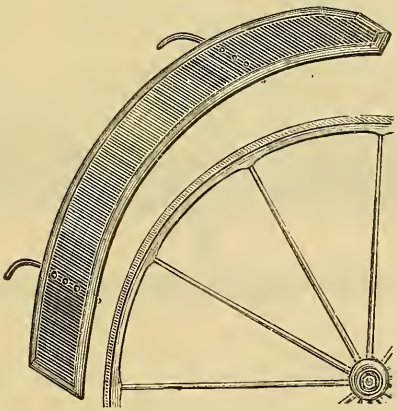
Price..... $2 50 per pair.

DIRECTIONS FOR PUTTING ON FENDERS.—Make and fit braces from ½ inch iron, flattening 2½ inches at outer end of brace; lay on Fender, and mark center panel for two holes over brace end; punch or drill two $\frac{3}{16}$ holes in Fender, and corresponding ones in brace end, as in cut. Place a thin strip of rubber between Fender and brace (to prevent noise), and fasten with $\frac{3}{16}$ round head rivets or bolts. Plated heads look well. If plain heads are used they can be painted or gilt, as preferred.

If the rubber strips are interposed between the braces and Fenders, as directed, we will warrant every pair to run *absolutely noiseless.*

Three sizes made—33, 36 and 40 in. long, 5½ in. wide. All bent same curvature, 28 in. radius.

WOOD FENDER.

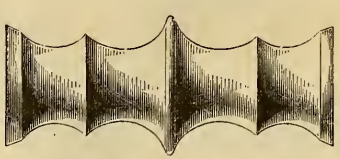


Curtis' Patent.

Price..... $2 00 per pair.

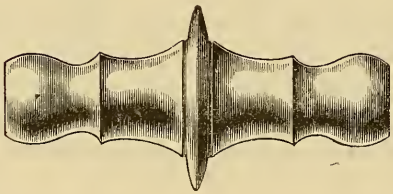
For phaetons and carriages they are lighter, cheaper and more durable than the old style. They will not dent, and the japan will not flake off as it does on sheet iron fenders. They are all finished in lead and filling, ready to paint with the body, and weigh but two pounds per pair.

SEAT RAIL COLLARS.



Electro Silver, $\frac{5}{16}$ Hole ..... $15 00 per gross.

DASH COLLARS.



	1½	2	3	4 in. long.
¼ in. Hole	$13 00	$16 00	$20 00	$26 00 per gross.
$\frac{5}{16}$ "	13 00	16 00	20 00	26 00 "
⅜ "	14 50	17 50	22 00	30 00 "

DASH ROD AND COLLAR.

¼ in. Rod with Plated Collar ..... $2 75 per dozen.
$\frac{5}{16}$ " " ..... 3 25 "
⅜ " " ..... 3 75 "

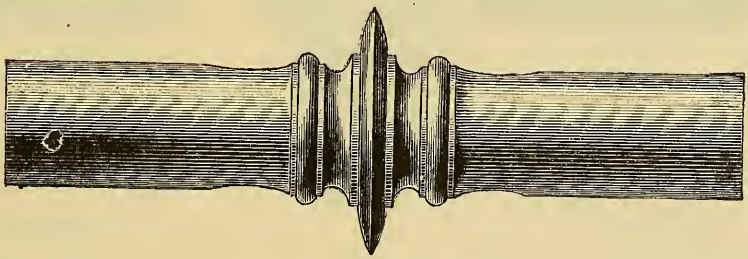
Are furnished with Collar only plated, or plated each side of the collar in addition.

SOLID COLLARS.

Seward's Patent.

Size	1/4 in.	$ 85	per dozen.
"	5/16	85	"
"	3/8	1 00	"
"	7/16	1 20	"
"	1/2	1 45	"
"	9/16	1 70	"
"	5/8	1 95	"
"	11/16	2 35	"
"	3/4	2 75	"
"	13/16	3 00	"
"	7/8	3 75	"
"	15/16	5 25	"
"	1	5 75	"

Packed in Boxes of 1 Doz. each.



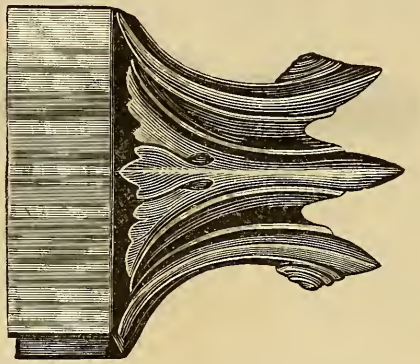
Seward's Patent.

Size,	1 1/8 in.	$12 50	per dozen.
"	1 1/4	17 00	"

Packed in Boxes of 1/2 Doz. each.

These Collars need no finishing with a file or emery wheel; are ready to paint as they come from the forge.

METALLIC SOCKET SCROLL ENDS.



Warburton & Bendir's Patents.

4½ in. wide for Back Bar			$1 25 per pair.
5	"	" "	1 40 "
1½	"	Front "	40 "

The above are used extensively by all first-class carriage manufacturers.

No. 1.

No. 2.

No. 3.

No. 4.

No. 5.

No. 6.

No. 7.

No. 8.

Spring-Bar Scrolls ..... 25 cents per pair.

No. 1.

No. 2.

No. 3.

Head-Block Scrolls ..... 25 cents per pair.

No. 1.

No. 2.

No. 3.

No. 4.

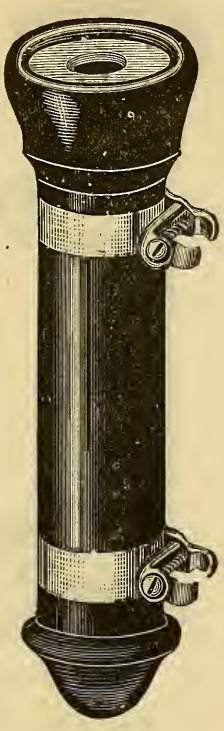
Perch-End Scrolls ..... 20 cents per pair.

Sleigh Scroll ..... 30 cents per pair.

SEARL'S BELL TOP AND CONE BOTTOM

WOOD WHIP SOCKETS.

For Road Wagons.



Full length, 6¾ inches.

Half Size.

No. 30.	Finished in Black Band	$6 00	per dozen.
31.	" Silver "	6 75	"
32.	" Gold "	7 25	"

All have Vise Fasteners. Nos. 30, 31 and 32 are uniform in size.

Packed half dozen in a box.

Insert the Fastener under the Leather.

SEARL'S BELL TOP AND CONE BOTTOM

WOOD WHIP SOCKETS.

For Light Road Wagons.

Full length, 5¼ inches.

Half Size.

No. 35.	Finished in Black Band	$6 00	per dozen.
36.	" Silver "	6 75	"
37.	" Gold "	7 25	"

All have Vise Fasteners. Nos. 35, 36 and 37 are uniform in size.

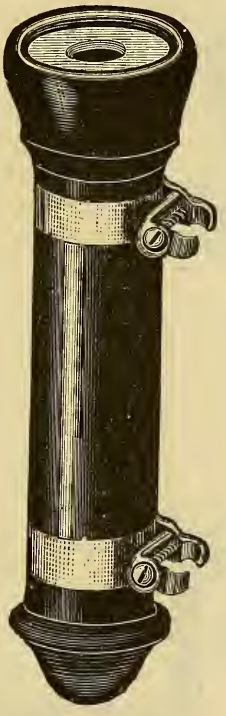
Packed half dozen in a box.

Insert the Fasteners under the Leather.

SEARL'S BELL TOP AND CONE BOTTOM

WOOD WHIP SOCKETS.

For Top Buggies.



Full length, 7 inches.

Half Size.

No. 41.	Finished in Black Band	$6 00	per dozen.
42.	" Silver "	6 75	"
43.	" Gold "	7 25	"

All with Vise Fasteners.

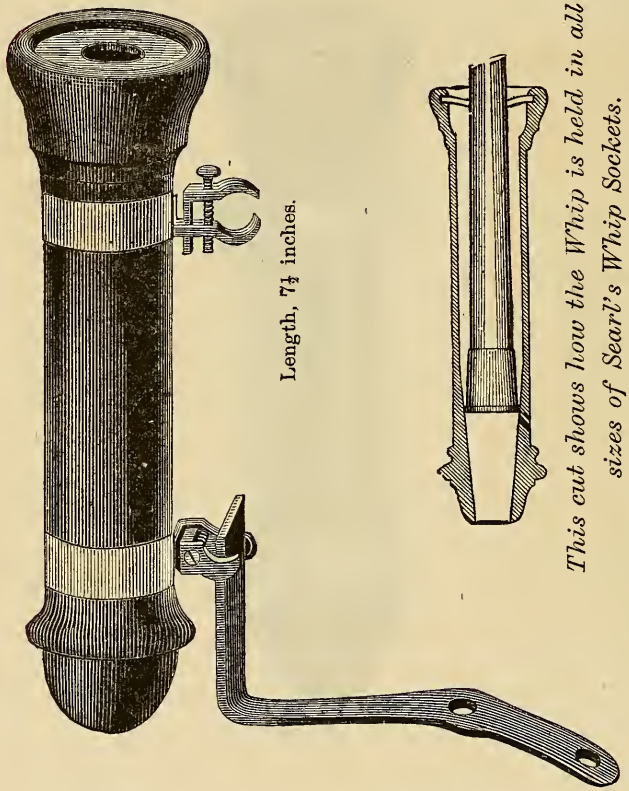
Nos. 41, 42 and 43 are uniform in size, and adapted to all kinds of carriages.

Packed half dozen in a box.

Insert the Fastener under the Leather.

SEARL'S BELL TOP AND CONE BOTTOM

WOOD WHIP SOCKETS.



Length, 7¼ inches.

This cut shows how the Whip is held in all sizes of Searl's Whip Sockets.

Half Size. *Seat Iron.*

No. 50.	Finished in Black Band. without Seat Iron	$7 00	per dozen.
51.	" Silver Mounting, without Seat Iron	8 00	"
52.	" Gold " " "	8 50	"

With Seat Iron, $1 00 per Doz. advance.

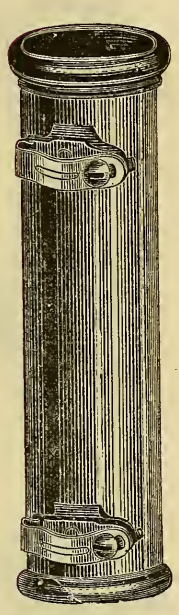
This Socket is made expressly for the Dicky Seat of Coaches, and will adjust themselves to any rail, covered or uncovered.

Packed ½ Doz. in a box.

RICHARDSON'S

PATENT WHIP SOCKETS.

Cut showing Design of Case, with Fastenings Complete.



Eureka.

Ne Plus Ultra.

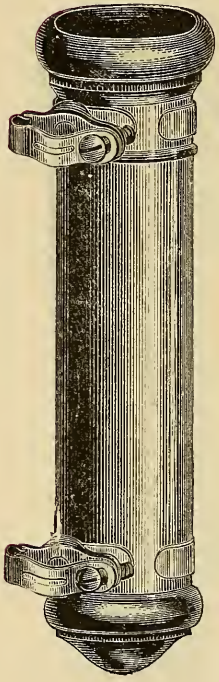
Eureka Pattern	$5 00 per dozen.
Ne Plus Ultra	6 00 "

The Eureka Pattern is made of sheet metal, finely Japanned, with Elliptic Springs for protecting the whip.

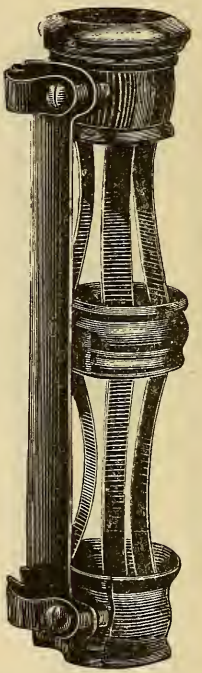
The Ne Plus Ultra is of solid metal, made a true taper inside and out, and of a size sufficient to hold firmly all styles of whips in an upright position with the aid of the Elliptic Springs.

RICHARDSON'S

PATENT WHIP SOCKETS.



Excelsior.



Acme.

Excelsior Pattern ..... $6 00 per dozen.
Acme " ..... 5 00 "

The Excelsior Pattern is made of wood furnished with the Elliptic Springs and Hinge Fastenings, and finely finished in every respect.

The Acme Pattern is made as represented above, and a very fine skeleton Socket constructed of malleable iron and sheet metal.

WHIP SOCKETS.

Worden's Patent.

Japanned, Metal Socket ..... $6 00 per dozen.

Packed in Boxes of ½ Doz. each.

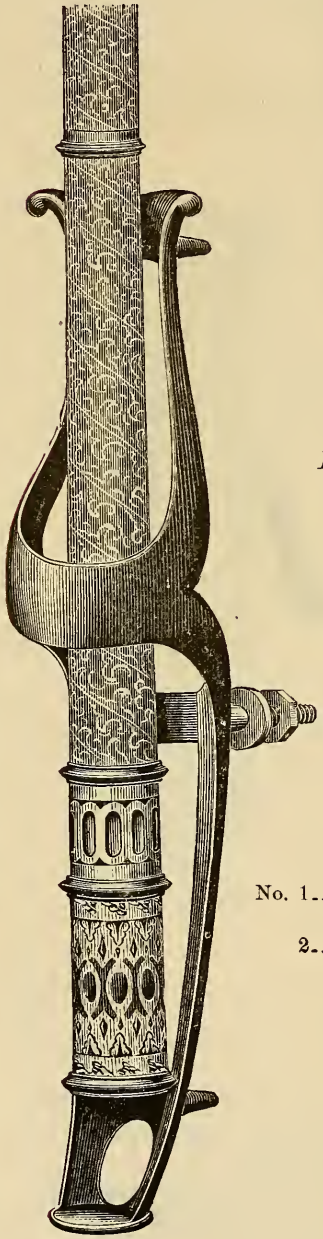
Searl's Wood Sleigh Socket.

Japanned, 10 in. long ..... $4 00 per dozen.
Japanned, 13 in. long ..... 5 50 "

The 10 inch used for Swell Side; 13 inch for Portland Cutters.

Packed in Boxes of ½ Doz each.

WHIP SOCKETS.



No. 1.

Buffalo

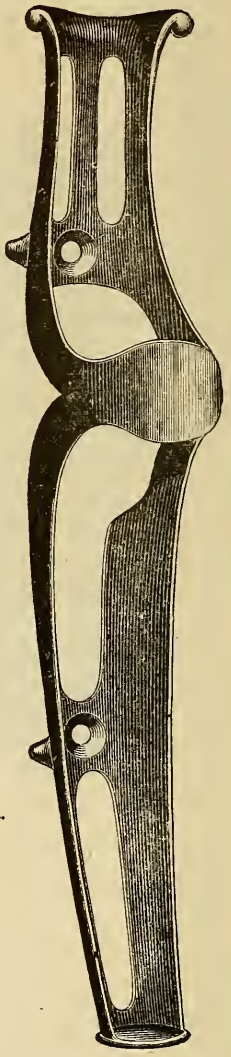
Patent Whip Holder.

No. 1, for Leather Dash.

No. 2, for Wood Dash.

No. 1..... $4 75 per dozen.

2..... 3 50 "

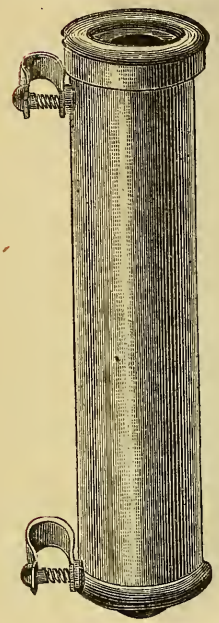


No. 2.

WHIP SOCKETS.

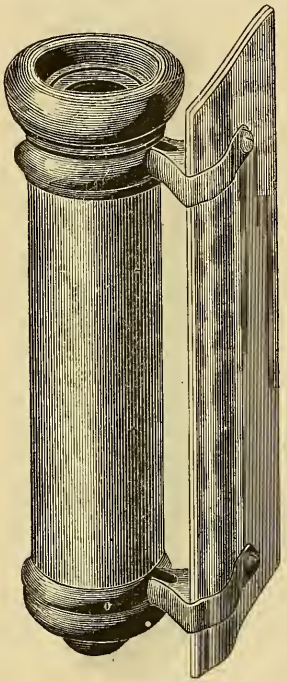
Showing Method of Attachment.

As sent to Market.



Metal.

Phœnix Clasp.



Wood.

		PER DOZ.
No. 1.	Japanned, Metal, Plain Top, no Rubber	$2 75
3.	" " " "	3 00
5.	" " Malleable Top, similar to No. 3, Union Clamp	3 50
6.	Japanned, Metal, same as No. 1, but without the Clasp Fastening, to be used with Straps	1 50
10.	Japanned, Wood, solid, with Rubber and Phœnix Clasp Fastening, 1¼ in. outside diameter	6 75
12.	Japanned, Wood, solid, with Rubber and Phœnix Clasp Fastening, 1⅜ in. outside diameter	6 75
11.	Japanned, Wood, solid, with Rubber, without Fastenings, 1¼ in. outside diameter	4 50
13.	Japanned, Wood, solid, with Rubber, without Fastenings, 1⅜ in. outside diameter	4 50

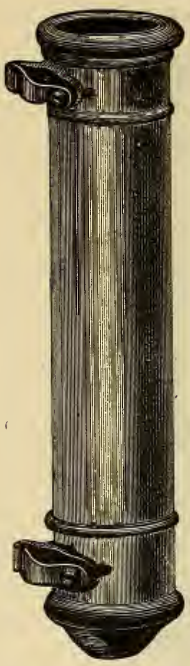
These Whip Sockets are readily attached to any Dash Iron, and securely fastened thereto by the Clasp, saving all expense of leather straps, besides being more durable.

WHIP SOCKETS.

Metal.

Plain Metal.

Metal.



Webb's Patent.

Webb	Socket,	Black	Top,	Hinge	Fastening	----------	$4 50	per dozen.
"	"	Silver	"	"	"	----------	4 50	"
"	"	Gold	"	"	"	----------	4 50	"
Beach	"	Black	"	"	"	----------	5 00	"
"	"	Silver	"	"	"	----------	5 00	"
"	"	Gold	"	"	"	----------	5 00	"
Tubular	"	Black	"	"	"	----------	3 00	"
"	"	Silver	"	"	"	----------	3 00	"
"	"	Gold	"	"	"	----------	3 00	"
"	"	Black, for Wood Dash				----------	2 50	"
"	"	"	"	Straps		----------	1 50	"

Packed in Boxes of ½ Doz. each.

These Sockets are finely finished, and well made in every way. The Spring inside the Webb Socket is very elastic, still strong enough to hold the whip firmly in position.

WHIP SOCKETS.

Union Clamp.

1 Doz. in a Box.

Chamberlain Clamp.

½ Doz. in a Box.

No. 1.	Chamberlain Clamp, size	1¼	in.,	without	Rubber Top	$3 00	per dozen.
2.	Union "	"	1¼	"	"	3 00	"
3.	" "	"	1⅜	with	"	4 70	"
5.	Chamberlain "	"	1¼	"	"	4 70	"
6.	" "	"	1⅜	"	"	4 70	"
8.	" "	"	1⅜	"	Cushion Top	5 25	"
10.	Union "	"	1⅜	"	"	5 25	"
12.	Chamberlain "	"	1⅜	"	"	8 25	"
14.	Union "	"	1⅜	"	"	8 25	"

Always insert the fastener under the leather.

Nos. 1 and 2 have Malleable Tops and Bottoms, no Rubber.

Nos. 3, 5 and 6 have Malleable Tops and Bottoms and Rubber Top.

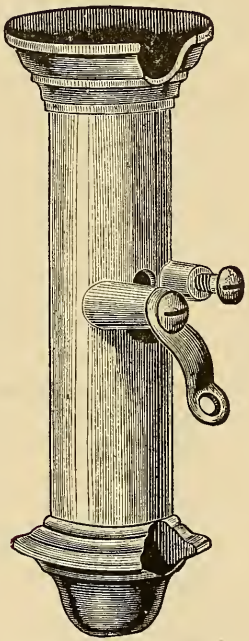
Nos. 8 and 10 are provided with a perpendicular Rubber in the Top, that forms a bearing for the whip.

Nos. 12 and 14 are lined with leather inside and outside, with Cushion Top and Bottoms that support the whip.

All of these Sockets are well finished, strong, and durable.

IRON WHIP SOCKET.

HALF SIZE.



Peters' Pattern.

Price..... $2 25 per dozen.

Above cut represents a Socket with a Central Fastener, with Niches to fit the Frame of the Dash, so that in fastening the Socket to the Dash it makes a complete finish. They are well japanned, and make a very cheap and durable Socket.

WHIP SOCKETS.

Flexible Rubber.

Buggy size	$3 50 per dozen.
Carriage "	3 75 "

Hard Rubber.

No. 1. With Spring	$7 00 per dozen.
2. " "	7 50 "
3. " "	8 00 "
10. No "	5 00 "
11. " "	5 50 "

MISCELLANEOUS.

Carriage or Buggy Aprons—Vulcanized Enameled Rubber.

	DUCK.	DRILL.	SHEETING.
With Dash Pocket, assorted sizes	$3 00	2 75	2 50 each.
Without " " "	2 75	2 50	2 25 "

Wagon Covers on Drill—Vulcanized Rubber.

All sizes	$1 30 per square yard.

Vulcanized Rubber Goods.

DRILL, 48 IN. WIDE.

20 oz. per yard	$0 96 per yard.
22 " "	1 00 "
25 " "	1 05 "
28 " "	1 15 "
30 " "	1 20 "
32 " "	1 25 "
36 " "	1 50 "
25 " " Flock Back	1 55 "
28 " " " "	1 65 "
Drill 50 in. wide, same weights as above, add	15 "
Duck 50 " " " "	20 "

Oil Carpet.

¾ yard wide	45 cents per yard.
⅞ " "	50 " "
1 " "	55 " "

Burlaps.

40 in. wide, Regular	15 to 20 cents per yard.
40 " Striped	25 " 35 " "
24 " Brown Canvas	18 " 25 " "

ENAMELED CLOTHS.

Drill.

4–4 wide, Black Enamel	$0 40	per yard.
5–4 " " "	45	"
48 in. " " "	50	"
6–4 " " "	65	"
5–4 " Brown and Green Enamel	55	"
48 in. " " " "	60	"
5–4 " Crimson and Scarlet "	90	"
48 in. " " " "	1 00	"
5–4 " Blue Back "	57	"
48 in. " " " "	63	"
48 " Flocked Back, Brown, Blue and Green	1 00	"
5–4 " Glazed Tan Back	60	"
48 in. " " " "	63	"
48 " Imitation Plain Rubber	55	"
Figured Back additional,	06	"

Duck.

4–4 wide, Enameled Black	$0 55	per yard.
5–4 " " "	60	"
50 in. " " "	65	"
6–4 " " "	75	"
50 in. " " " Leather Cloth	75	"
50 " " extra heavy Leather Cloth	95	"
5–4 " " Brown and Green	70	"
50 in. " " " "	80	"
6–4 " " " "	85	"
50 in. " " Yellow and Drab	90	"
5–4 " " Oiled Back	72	"
50 in. " " " "	78	"
6–4 " " " "	85	"
Figured Back additional,	06	"
5–4 wide, Enameled, Blue Back	70	"
50 in. " " " "	75	"
6–4 " " " "	85	"
50 in. Flocked Back, Green, Brown and Blue	1 25	"

Muslin.

4–4 wide, Enameled Black	$0 35	per yard.
5–4 " " "	40	"
6–4 " " "	50	"
5–4 " Glazed "	40	"
4–4 " Enameled, Brown and Green	45	"
5–4 " " " "	48	"
6–4 " " " "	62	"
5–4 " " Drab, Russet, Yellow and Blue	60	"
5–4 " " Red	60	"
5–4 " " Crimson and Scarlet	80	"
5–4 " " Gold, Silver and Copper Bronze	80	"
5–4 " " Black, extra heavy	55	"
5–4 " " Brown and Green, extra heavy	65	"
5–4 " " Russet, Blue and Drab	75	"
5–4 " " Crimson and Scarlet	90	"
5–4 " " Flocked Back, Brown, Green and Blue	90	"
5–4 " Glazed Tan Back	50	"
Figured Back additional,	06	"

Moleskin.

4–4 wide, Glazed	$0 85 to 1 20	per yard.
48 in. " "	1 10 " 1 40	"

MISCELLANEOUS.

Broadcloths.

Brown, of different qualities	varying from	$1 30	to	$7 00	per yard.
Blue, " "	" "	1 30	"	7 00	"
Green, " "	" "	1 30	"	7 00	"
Drab, " "	" "	1 30	"	7 00	"
Black, " "	" "	1 30	"	7 00	"

For Body and Head Linings.

Carriage Carpets.

BRUSSELS, VELVETS, AND WILTONS.

Colors in Crimson, Drab, Red, Green, Blue, Brown, etc., varying in price from $1 30 to $4 50 per yard.

Damasks.

Cotton	$15 00	to $18 00	per piece.
Union	27 00	" 35 00	"
Parametta	80	" 95	per yard.

Mats.

No. 1. Small Allicante	$12 00	to $15 00	per bale.
2. Medium "	12 00	" 15 00	"
3. Buggy Size	12 00	" 15 00	"
1. Valour, plain center, Buggy Size	$18 00		per dozen.
2. " fancy " " "	21 00		"
Sheepskin, assorted sizes and colors	$2 50	to $6 00	each.
Thread Mats, Buggy Size	$15 00	to $20 00	per dozen.

Patent and Enameled Leather.

Top Leather, extra select	25	to 30	cents	per foot.
" " No. 1, Black Enameled	25	" 27	"	"
" " 2, " "	23	" 25	"	"
Trimming Leather, No. 1, Black Enameled	23	" 25	"	"
" " fancy colors, Black Enameled	23	" 36	"	"
Patent Collar, No. 1	25	" 28	"	"
" " 2	23	" 26	"	"
" Bow or Railing	23	" 25	"	"
" Dash, No. 1, soft finish	15	" 20	"	"
" " 2, " "	12	" 14	"	"
" Grain Dash Leather	26	" 30	"	"
Oil-Dressed Top "	30	" 35	"	"
Harness Leather, black	45	to 60	cents	per pound.
Bridle " "	45	" 60	"	"

Sundries.

Lace	per yard.
Broad Lace, Silk and Worsted	"
Narrow " Nailing and Pasting	"
Fringes	"
Carriage Holder Tassels	per dozen.
Spring Curtains	"
Silk Carriage Acorns	"
" " Frogs	per pair.

MISCELLANEOUS.

Buckram.

First Quality, best ..... 20 to 24 cents per yard.
Second " medium ..... 15 " 18 " "

Scrims.

Price ..... 18 to 22 cents per yard.

Druggets and Felts.

Price ..... $1 15 to $2 00 per yard.

Velveteens.

Price ..... $1 25 to $2 25 per yard.

Corduroys.

Price ..... $0 75 to $1 75 per yard.

Tufting Twine.

First Quality, smooth finish ..... 75 cents per pound.
Second " ..... 60 " "
Third " ..... 40 to 50 " "

Seaming Cord.

Hard, usual size ..... 35 to 40 cents per pound.
" small " ..... 40 " 50 " "
Soft, best quality ..... 25 " 30 " "
" second " ..... 20 " 25 " "

Barbour's Sewing Machine Thread.

SIX-CORD CABLE TWIST.

No. 432. In colors ..... $2 50 per pound.
532. " " ..... 3 00 "
632. " " ..... 3 25 "

In ½ pound Balls.

No. 35. Barbour 3-cord Thread ..... 2 00 "
35. " 5-cord " ..... 2 00 "

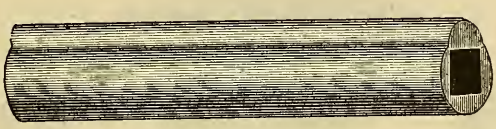
Barbour's Best Irish Flax.

No. 3. Dark Blue ..... $1 40 per pound.

Machine Silk Twist.

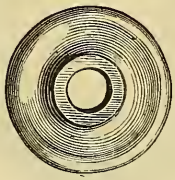
On Spool ..... $0 95 to $1 30 per spool.

MISCELLANEOUS.



Rubber Top Blocks.

In pieces of 2 feet each ..... $1 00 per foot.



Prop Block Washers.

Japanned	$0 50	per dozen.
Silver	75	"
Gold	1 35	"
Rubber	1 00	"

Packed in Boxes of ½ Gross each.

Curled Hair.

All grades, in Ropes or Sacks, in 25 and 50 pound packages, 40 to 75 cents per pound.

Moss.

In Bales of about 150 pounds ..... 10 to 18 cents per pound.

Excelsior.

In Bales of about 250 pounds ..... 3 to 5 cents per pound.

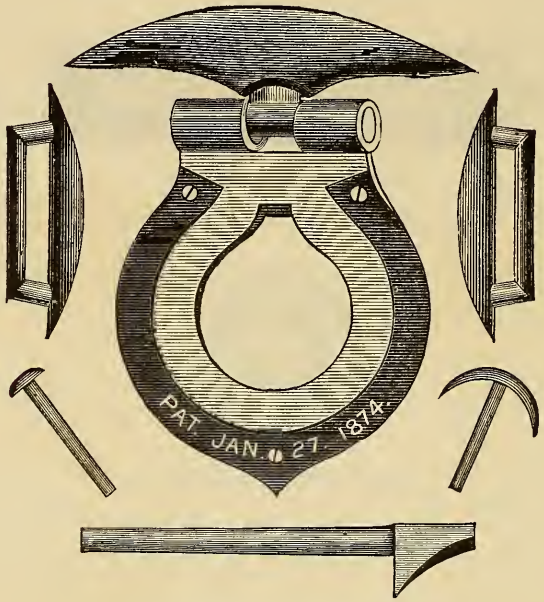
Tow.

Price ..... 4 to 6 cents per pound.

Horse Shoe Harness Buckles.

½ in.	Japanned	$0 50	per gross.
⅝	"	55	"
¾	"	65	"
⅞	"	80	"
1	"	1 00	"
1¼	"	1 40	"

CARRIAGE NECK YOKE TRIMMINGS.

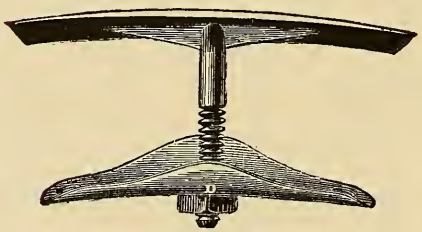


Moon's Patent.

PRICE WITH RIVETS COMPLETE.

No. 1.	Size for 1⅛ in. Pole Tip	$10 00	per dozen	sets.
2.	" 1¼ "	12 00	"	"
3.	" 1⅜ "	15 00	"	"

A set includes Loops, Lug and Rivets.



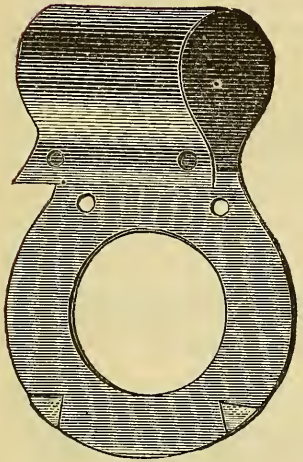
Mellyn's Patent Felloe Holder.

For	¾	⅞	1	1⅛	1¼	1½	in. felloes.
Price	$1 25	1 25	1 25	1 50	1 75	2 00	per set.

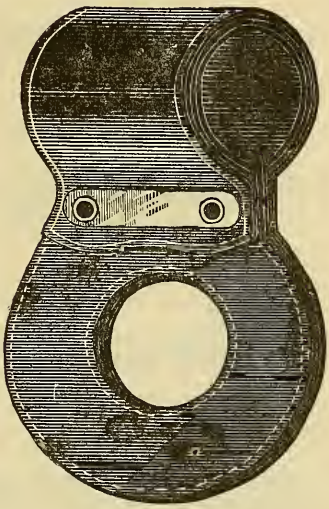
The above Felloe-Holder is designed to prevent the Felloe from splitting, and keep it out to a true circle.

A set consists of 8 Felloe-Holders and Plates.

NECK YOKE RINGS.



Russia Iron Lining.



Neck Yoke Ring Complete.

Brigham's Patent Metallic Lined.

No. 1 will fit 1	in. to 1¼	in Neck Yoke	----------	$8 00	per dozen.
2	" 1⅜	" 1⅝	"	----------	8 00	"
3	" 1¾	" 2	"	----------	8 00	"

Single Pair, 75 cents.

Above Ring has a lining of heavy Russia Iron extending around the Yoke, thus preventing it from stretching either in the hole or around the Yoke. The Ring is left open, and all that is necessary to put it on is to spring the iron over the Yoke, draw the leather over and head down the rivets. A copper plate and rivets are furnished for this purpose.

SHAFT SOCKET.

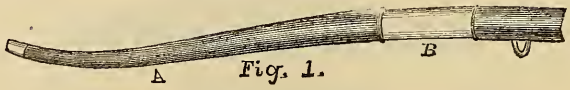


Fig. 1.

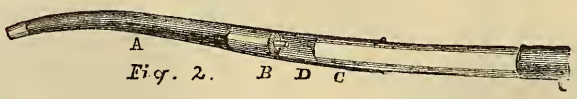


Fig. 2.

Raymond's Patent.

Plain Black ..... $1 50 per pair.
" " with Close Plated Tips ..... 1 75 "

DIRECTIONS FOR USING. — Saw shaft off to such a length that it will reach in the Socket to the filling at B, Fig. 2; fit the end into Socket, so that it will go on easily to within half an inch of place. The fillings have a ⅜ inch hole for a dowel, which should be put in end of shaft, then apply thick paint, and drive the Socket to place, using a piece of wood or leather on the end, to prevent bruising.

The above takes the place, almost entirely, for leather covering. It is finely Japanned to imitate leather, and certainly looks better; is stronger and more durable. For repairing a broken shaft at the tip nothing excels it, as the shafts can be repaired in a few moments time without taking them from the buggy. All Sockets are filled with wooden plugs, unless otherwise ordered.

POLE SOCKET.

Topliff & Ely.

Plain Black ..... $9 00 per dozen.
" " Close Plated Tip ..... 15 00 "

Above Pole Socket is something desired by the carriage maker, and answers the purpose for a pole that the Shaft Socket does for the shaft. It is made of sheet iron with a solid end, and prevents the horse from gnawing and the neck yoke from cutting into the pole. Are light and very durable.

BLACK HARNESS LEATHER CARRIAGE STRAPS.

Check Straps, Raised and Creased Tops.

⅞	in. wide by	32	in. long,	Japanned Buckles	$6 50	per dozen pairs.
⅞	"	40	"	"	7 00	" "
1	"	32	"	"	7 00	" "
1	"	40	"	"	7 50	" "

Safety Straps, Raised and Creased Tops.

⅝	in. wide by	25	in. long,	Japanned Buckles	$3 25	per dozen pairs.
¾	"	21	"	"	3 25	" "

Curtain Straps, Raised and Creased Tops.

⅝ in. inside by 15 in. long ..... $15 00 per single gross.

Raised Shaft Straps.

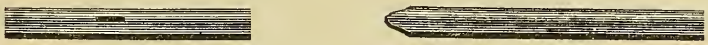
⅞ in. wide by 12 in. long ..... $9 50 per gross

In sets of 4 pieces, ⅞ in. wide by 12 in. long } ..... $4 00 per dozen sets.
" 2 " ⅞ " 6 " }

1 in. wide by 15 in. long, in sets of 5 pieces ..... 5 00 " "

Round Shaft Straps.

⅞ in. wide, ⅜ in. diameter ..... Put up in Sets of
2 pieces ..... 16½ in. long,
2 " ..... 12 "
2 " ..... 6 "
..... $9 00 per dozen sets.



Billets and Chasers.

⅝ in. wide ..... $10 00 per gross pairs.

Whiffletree Keys, Creased.

6 in. long ..... $2 00 per gross.

All of the above are made from the best Oak-Tanned Leather, in a more superior style and finish than they can be made in a carriage shop.

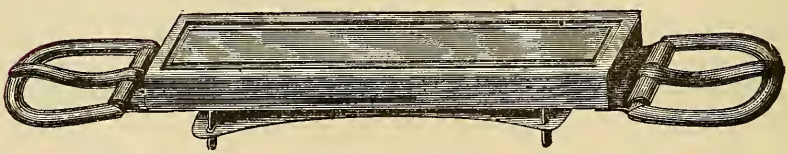
METALLIC LOOPS AND BUCKLES.

Loop Ends.

Price.....$5 00 per hundred.

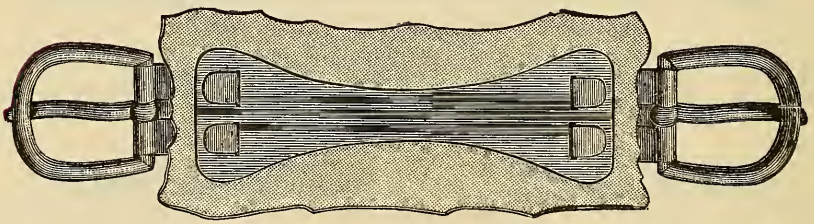
Loop with One Buckle.

Price.....$6 00 per hundred.



Loop with Two Buckles.

Price.....$7 00 per hundred.



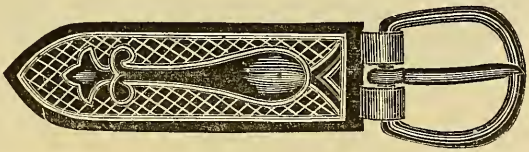
Cut showing how the above are fastened.

Patented Jan. 19, 1867.

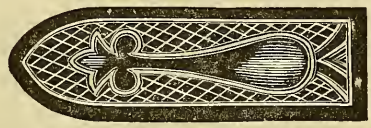
The above are made of the best Russia Iron and double Japanned. They cannot tear out, as the lower cut shows how firmly they are fastened, and as now made are all that can be desired.

CURTAIN LOOPS.

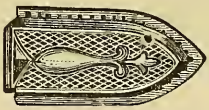
No. 1. Japanned Tin, 5/8 in. wide, 4 1/4 in. long ..... $7 00 per hundred.



No. 2. Japanned Tin, 5/8 in. wide, 2 3/4 in. long ..... $6 50 per hundred.



No. 3. Japanned Tin, 5/8 in. wide, 1 7/8 in. long ..... $6 00 per hundred.



Leather Pointed Curtain Loops.

No. 4.	For 1/2	in.	Strap,	Low,	Black	Leather	.....	65 cents	per dozen.
5.	" 1/2	"		High,	"	"	.....	65 "	"
6.	" 5/8	"		Low,	"	"	.....	70 "	"
7.	" 5/8	"		High,	"	"	.....	70 "	"

The Low Loops are for single straps; the High for double straps.

Leather Curtain and Pole Strap Loops.

No. 8.	1/2 in.	wide,	2 in.	long,	Black	Leather	Curtain.....	55 cents	per dozen.
9.	1/2	"	2 3/4	"	"	"	.....	70 "	"
10.	5/8	"	2	"	"	"	.....	60 "	"
11.	5/8	"	2 3/4	"	"	"	.....	75 "	"

Order by the numbers to avoid mistakes.

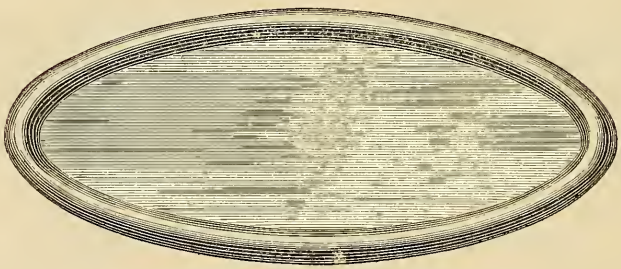
CURTAIN FRAMES.

No. 0. Size 3 In. Wide, 5¾ In. Long.

Japanned	$1 25 per dozen.
Silver	1 30 "

No. 1. Size: 3 In. Wide, 5¾ In. Long.

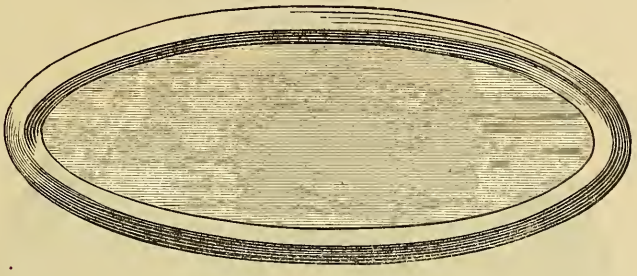
Japanned	$1 25 per dozen.
Silver	1 30 "



No. 2. Size: 2¾ In. Wide, 6½ In. Long.

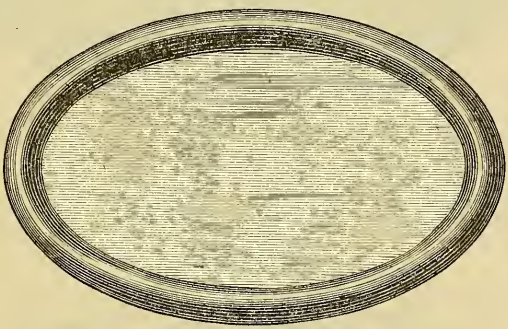
Japanned	$1 25 per dozen.
" Black Back	1 40 "
Silver	1 25 "

CURTAIN FRAMES.



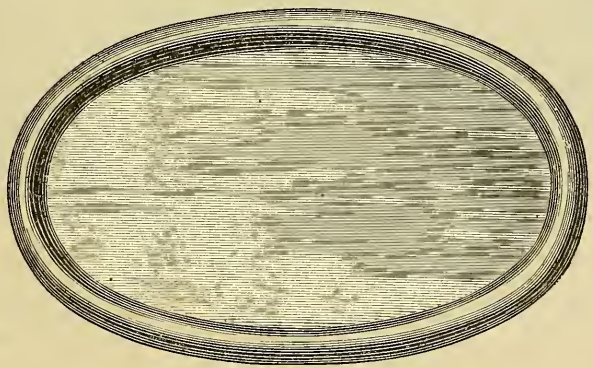
No. 3. Size: 2¾ In. Wide, 6½ In. Long.

Japanned	$1 25	per dozen.
" Black Back	1 40	"
Silver	1 30	"



No. 4. Size: 3½ In. Wide, 4¼ In. Long.

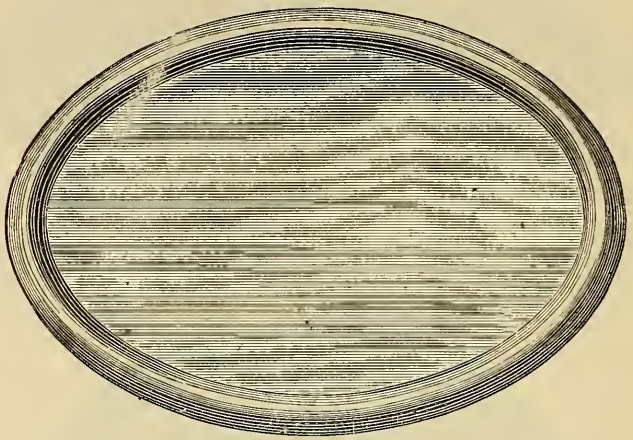
Japanned	$1 25	per dozen.
" Black Back	1 40	"
Silver	1 25	"



No. 5. Size: 3¾ In. Wide, 6 In. Long.

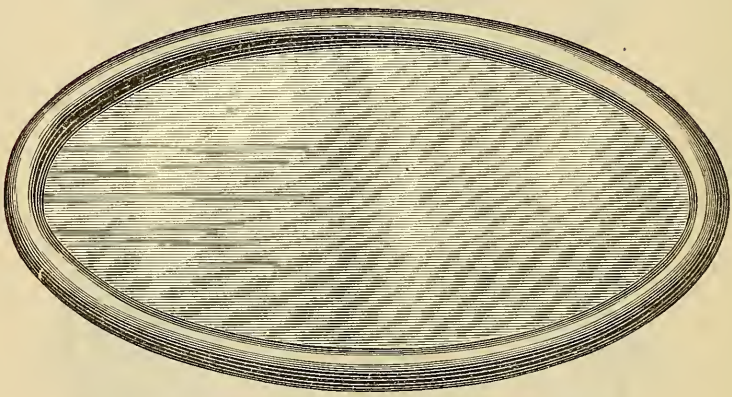
Japanned	$1 70	per dozen.
" Black Back	1 85	"
Silver	2 00	"

CURTAIN FRAMES.



No. 6. Size: 4½ In. Wide, 6½ In. Long.

Japanned ..... $1 85 per dozen.
Silver ..... 2 10 "



No. 7. Size: 4⅛ In. Wide, 7¾ In. Long.

Japanned ..... $2 25 per dozen.
Silver ..... 2 50 "

No. 8. Size: 6 In. Wide, 9¾ In. Long.

Japanned ..... $2 90 per dozen.
Silver ..... 3 50 "

ADJUSTABLE CARRIAGE UMBRELLA.

Adjustable Holders.

A — Straight Holder, holds umbrella upright and adjust to attitude only ..... $2 25 each.
C — Adjustable Holder, Malleable except Standard, improved Seat-Plate, 1874 ..... 5 00 "
D — Malleable Adjustable Holder ..... 5 50 "

The new Seat-Plate is a decided improvement on the old, in the facility of attaching and removing the Standard, and holds it perfectly immovable in the Plate, and does away with the screw of the old style.

UMBRELLA PRICE LIST.

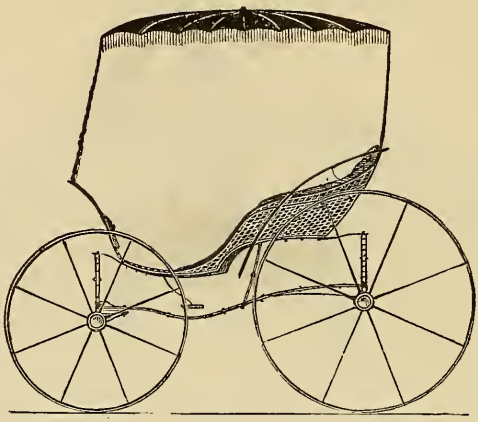
Phaetons, Buggy, Cab, Truck, Artists' and Boat Umbrellas.

No. 1.	36 in.,	heavy waterproof, tin top. Colors: buff, brown, green. 8 ribs	$3 00
2.	36	same, wheel top. 8 ribs	3 50
3.	36	extra heavy twilled waterproof, wheel top. All colors. 10 ribs	4 00
4.	38	same. All colors	4 50
5.	36	best twilled waterproof; overcaps; wheel; heavy English furniture; brass tips. Prime article. All colors. 10 ribs	5 50
6.	40	same. Handle ¼ in. larger in diameter. For trucks or very large wagons. 10 ribs,	6 50
7.	36	very best twilled waterproof. All colors. With Patent Union reinforced ribs. *Strongest possible umbrella rib.* Overcaps. English furniture. The very best and strongest umbrella that can be made	6 50
8.	40	same as No. 7, with handle ¼ in. larger in diameter: same as No. 6. Suitable for large trucks or other heavy work. Largest, strongest and most durable umbrella made. 10 ribs	8 00
9.	36	best twilled waterproof, Patent Storm King Frame, overcaps, etc. Best steel umbrella frame made. 10 ribs	6 50
10.	36	best twilled waterproof. Overcaps. Colors: brown, buff, green. Lined either blue, brown, green, pink. 10 ribs	9 50
11.	36	best twilled waterproof. Border overcaps. Colors: brown, buff, green. Lined any color. Patent reinforced frame. 10 ribs	11 00
12.	36	satin border, twilled, Vicuna serge, like silk. Colors: buff, brown, green. Lined any color. Patent reinforced frame. 10 ribs	14 50
Prices for fringing depth with 2 in. bullion, additional			4 00
" " " 3½ " "			5 50

N. B. — When ordering, give quality, number and color of cover. When lined, color of lining. When fringed, color and depth of fringe.

If the umbrella is to be used *without one* of our holders, please specify *long stick*, as those used with the holders are only 44 inches long, while those without the holder must be 6 feet.

CANOPIES.



Imported.

Above Canopies are strong, durable, and well made, having double ribs of steel, outside covering of heavy alpaca (usually light drab), with fine paramatta lining of blue, green, maroon or brown; a heavy interlining, and deep, heavy mohair fringe to match color of lining, making the most stylish and desirable protection for ladies' phaetons ever used; can be easily taken off and folded into a package of the size of an umbrella (encased in an enameled linen cover), and can be sent to any part of the country by express, to dealers, manufacturers, or parties wanting one for immediate use. They can be easily fastened to the seat, by running the staff down between trimming and back of body, and bolting foot to bottom of body. The Canopy should be set high enough to clear a gentleman's hat, with front elevated about four inches and drawn down level with cord and fastened to dash, which keeps it steady and firm when driving. The following sizes can be furnished:

4 ft. 6 in.	long, by	4 ft. 6 in.	wide			$40 00
5	"	5	"	"		43 00
5 6	"	5	"	"		46 00

Smallest size for small phaetons; medium, for full-sized phaetons; largest size, for four seats.

These being imported goods the cost depends on the price of gold and exchange. If these should change to any great extent we should charge accordingly, and may do so without notice.

Wood Canopy for Standing Top.

We furnish a very light wood frame of bent work put together very strongly to fit our bodies. It is supported by iron posts which are made very light and well braced. It makes a very light and durable standing top. It can be taken off or put on at pleasure.

We also furnish the iron posts which are in two parts so that they may be welded longer or shorter as desired, and the top leveled up after the body is hung.

Lamp socket each side attached to iron posts.

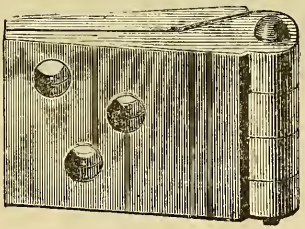
Price Wood Frame, for single-seat phaeton	$8 00
" " " double " "	12 00
4 Iron Posts, for single-seat phaeton	10 00
6 " " double " "	15 00

If tops are wanted separate from bodies, please give us the length and width wanted, and whether the back of the body is round or square cornered.

DOUBLE JOINT COACH HINGES.

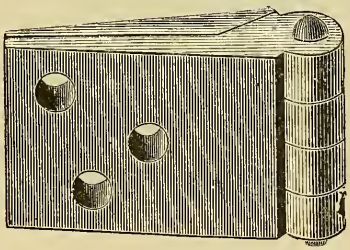
MALLEABLE IRON.

The following Coach Hinges are made of the best material, and are considered far superior to all others now in market in strength, excellence of finish, and in their perfect adaptability to the Coach Maker's use. The screw holes are made so that they do not line with each other, hence no splitting of the wood occurs when they are screwed on



1 Inch Wide.

1	1¼	1½	1¾	2	2¼	2½	2¾	3	in. long.
$0 85	0 85	0 90	0 95	1 05	1 15	1 25	1 35	1 45	per dozen.

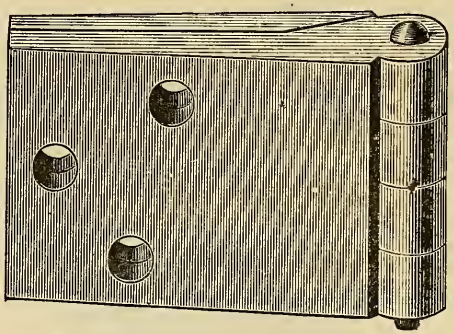


1¼ Inch Wide.

1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	in. long.
$1 00	1 00	1 10	1 20	1 30	1 40	1 50	1 60	1 70	1 80	1 90	per dozen.

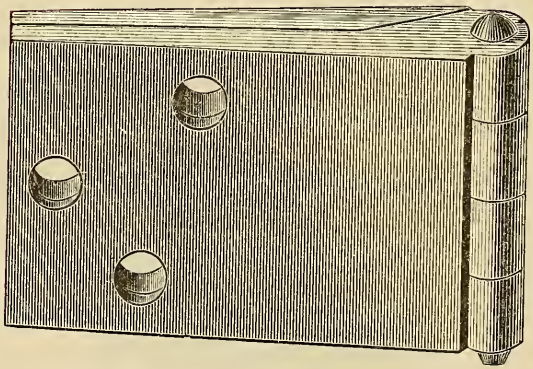
DOUBLE JOINT COACH HINGES.

MALLEABLE IRON.



1 1-2 Inch Wide. Right and Left.

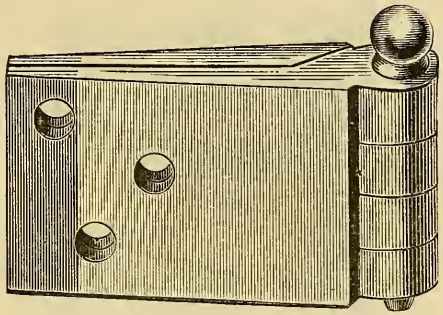
1½	1¾	2	2¼	2½	2¾	3	3¼	in. long.
$1 35	1 45	1 55	1 65	1 75	1 85	1 95	2 05	per dozen.



1 3-4 Inch Wide. Right and Left.

2	2¼	2½	2¾	3	3¼	3½	3¾	4	4½	5	in. long.
$2 00	2 25	2 50	2 75	3 00	3 25	3 50	4 00	4 25	5 00	6 00	per doz.

DOUBLE JOINT COACH HINGES.



Silver Plated, on Composition. Silver Acorn Head Joint Rivet.

1¼ Inch Wide.

1¾	2	2¼	2½	2¾	3 in. long.
$5 50	5 75	6 00	6 25	6 50	6 75 per dozen.

1½ Inch Wide, Right and Left.

2	2¼	2½	2¾	3	3¼	3½ in. long.
$7 00	7 25	7 50	7 75	8 00	8 25	8 50 per dozen.

1¾ Inch Wide, Right and Left.

2	2¼	2½	2¾	3	3¼	3½ in. long.
$10 50	11 00	11 50	12 00	12 50	13 00	13 50 per dozen.

Brass—Same Patterns as those made of Malleable Iron.

1¼ Inch Wide.

1¼	1½	1¾	2	2¼	2½	2¾	3 in. long.
$1 75	1 95	2 15	2 35	2 55	2 75	2 95	3 15 per dozen.

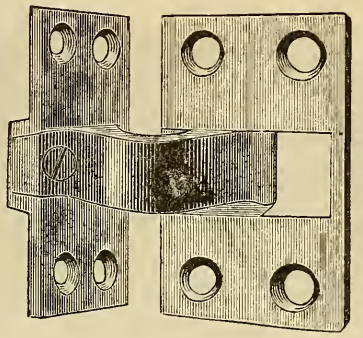
1½ Inch Wide, Right and Left.

1½	1¾	2	2¼	2½	2¾	3	3¼ in. long.
$3 05	3 40	3 75	4 10	4 50	4 90	5 30	5 70 per dozen.

1¾ Inch Wide, Right and Left.

2	2¼	2½	2¾	3	3¼	3½ in. long.
$5 30	5 70	6 10	6 50	6 90	7 30	8 00 per dozen.

CONCEALED HINGES.



Cady's Patent.

No. 1.	Size 1¼ in.	$4 00	per set.
2.	" 1½	4 00	"
3.	" 1¾	4 50	"
4.	" 2	4 50	"

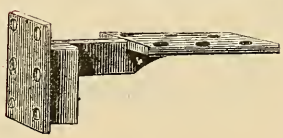
LANDAU HINGES.

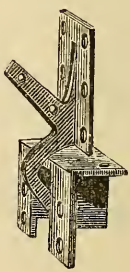
French Pattern

Improved Five Glass Landau Hinges.

Price for complete Set $20 00

These Hinges allow the front to drop altogether in one body under the Dickey Seat. There are no pillars to fold up, or awkward catches. They are being used by the best makers all over the country.





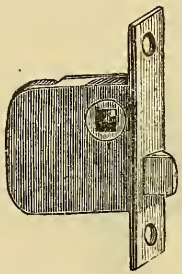
SPRING BOX LOCKS.

With Plates.

½ in. ---------- $4 00 per dozen pairs. ¾ in. ---------- 4 50 per dozen pairs.
⅝ ---------- 4 50 " " ⅞ ---------- 4 75 " "

Packed in Boxes of 1 Doz. Pairs each.

CARRIAGE SPRING LOCKS.

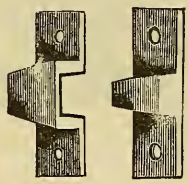


Made and Finished in the Best Manner.

No. 0 ½ in., for light doors---------- $9 50 per dozen pairs.
1 ½ " " " ---------- 9 50 " "
1. ⅝ in.--- $9 50 per dozen pairs. No. 2. ¾ in.--- 11 00 " "
2. ⅝ --- 11 00 " " 7. ⅝ --- 15 00 " "

Packed in Boxes of 6 Pairs each.

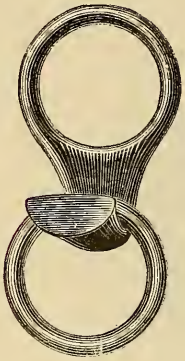
DOVETAILS.



Made of Malleable Iron.

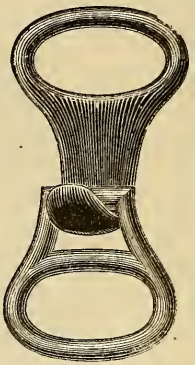
No. 1. Light, $1 50; No. 2. Medium, $1 50; No. 3. Heavy, $1 75 per dozen.

APRON, REIN AND BOOT HOOKS.



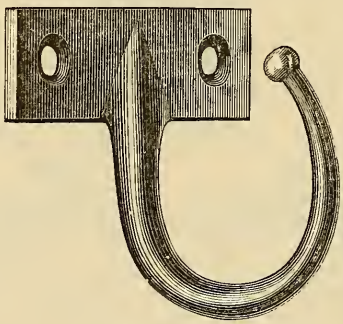
No. 1.

Apron Hooks.



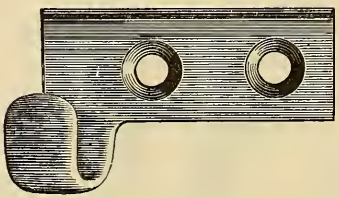
No. 2.

Malleable Iron, Japanned	$2 50 per gross.
" " Tinned	2 75 "
Silver Plated	15 00 "



Rein Hook.

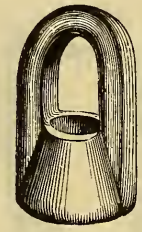
Malleable Iron, Japanned	$3 50 per gross.



Boot Hook.

Malleable Iron, Japanned	$3 00 per gross.

LOOP HEAD NUT.

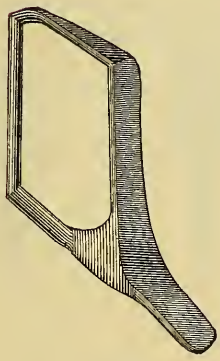


With ¼ in. hole ..... $1 00 per hundred.
" 5/16 " ..... 1 00 "

This Nut is much better than the ordinary ring nut, being more convenient, and not so liable to catch the clothing or to break as the wing head. Are made of Best Iron, filed and finished, ready for use.

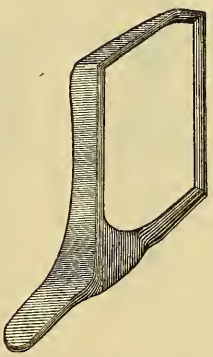
Packed in Boxes of 100 each.

SEAT HANDLES.



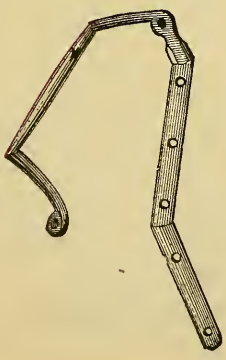
Right and Left,

with corners combined.

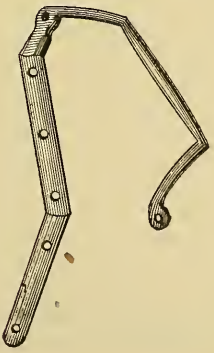


No. 1. With 3½ In. Handles.

Price, 15 cents per pair.



Right and Left.

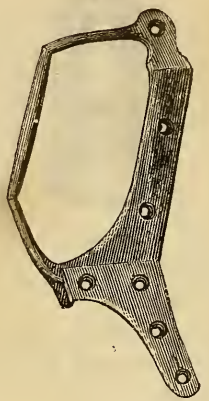


No. 2. With 3½ In. Handles.

Price, 20 cents per pair.

Above are made of the best Malleable Iron.

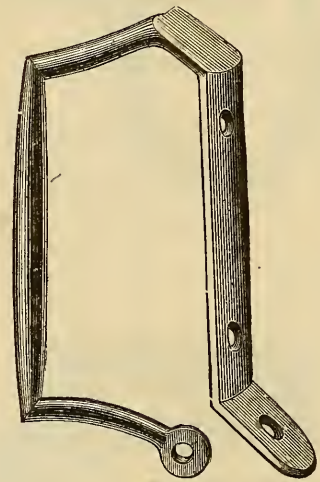
SEAT HANDLES.



No. 3. With Top Eye.

Price ..... 50 cents per pair.

These Handles are made of the best Malleable Iron, and can be easily fitted to a seat, saving a great deal of labor, and look neater than those made by hand.



Half Size.

No. 4. With 3½ In. Handle.

Malleable Iron, Japanned ..... $2 50 per dozen pairs.
Composition Electro-Silver ..... 15 00 " "

CARRIAGE KNOBS.

WITH ROUND OR SQUARE WROUGHT SHANKS.

Silver Capped. No. 175.

ROUND SHANK.

Japanned. No. 175.

SQUARE SHANK.

Japanned. No. 175.

ROUND SHANK.

Silver Plated. No. 175.

SQUARE SHANK.

JAPANNED ROUND SHANKS.

No. 2.

No. 3.

No. 140.

No. 185.

No. 195.

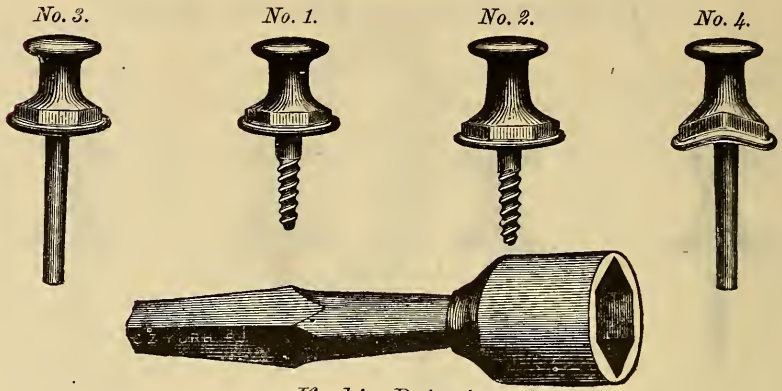
Above are Full Sizes.

PRICE PER GROSS.

Nos.	2	3	140	175	185	195
English Finished, Japanned				$1 40		
Silver Plated				4 00		
Silver Capped	$1 44	$1 44		1 44		
Japanned	0 80	0 80	$0 80	0 80	$0 80	$0 80

Round Shanks are always sent unless Square Shanks are specified in the Order.

CARRIAGE KNOBS.



Kroh's Patent.

PRICE PER GROSS.

No. 1.	Screw Knob, for single thickness curtain, hexagonal base	$1 50
2.	" " double " " " "	1 65
3.	Riveting Knob, ⅞ in. shank, for single curtain, hexagonal base	1 50
4.	" " concave, for shifting rails " "	1 50

Are put up in Boxes of 1 Gross each, with a wrench for bit.

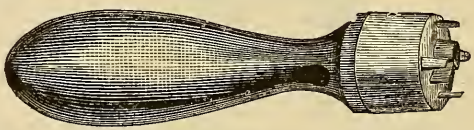
KNOB AND PATCH FASTENER.

Patented December 2, 1872.

Price ..... $2 00 per gross.

This Fastener is very simple, and the best now in use for holding the knob, being made of good Russia Iron and well Japanned.

KNOB AND PATCH FASTENER PUNCH.

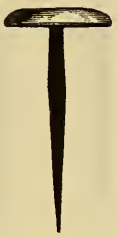


Used for Putting On Above.

Price ..... $1 50 each.

TUFTING NAILS.

20 LINE.



22 LINE.

20 and 22 Line, Japanned	$0 18 per gross.
20 " 22 " Silver	20 "
Cloth	60 "
Plush Covered	1 50 "

TUFTING BUTTONS.

18 LINE.

20 LINE.

22 LINE.

18 Line, Japanned	$0 18 per gross.
20 " "	18 "
22 " "	18 "
Cloth	60 "
Plush Covered	1 50 "

A Line is the fortieth part of an inch.

LINING NAILS.

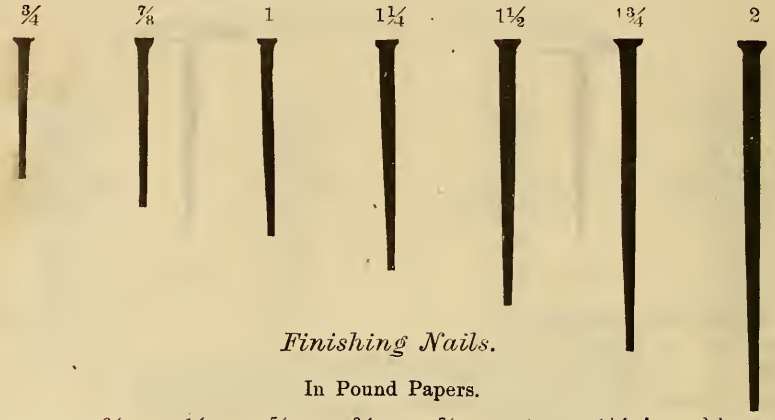
4 oz. 6 oz. 8 oz. 10 oz. 12 oz. 14 oz. 16 oz.

Common.

Japanned, either size	5 cents per paper.
Silver, " "	5 " "

Cuts Full Size.

NAILS.

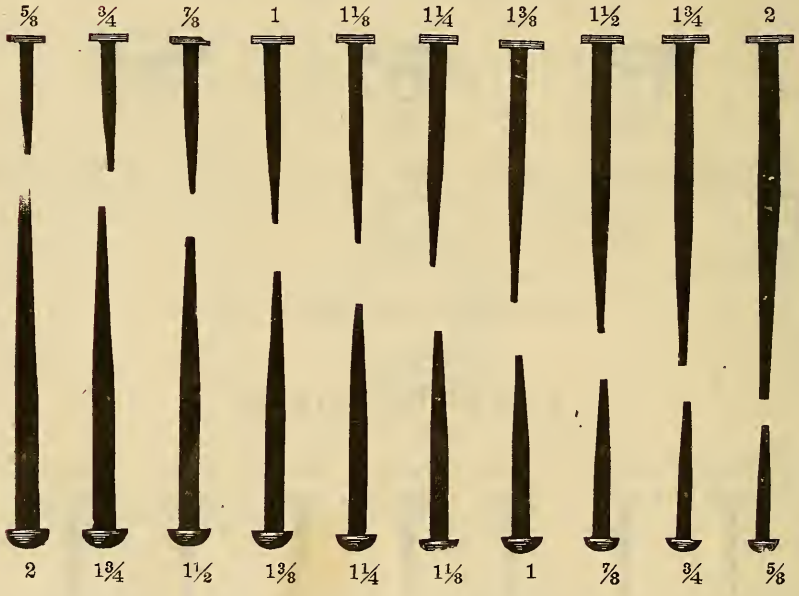


Finishing Nails.

In Pound Papers.

	⅜	½	⅝	¾	⅞	1	1¼	in. and longer.
Price----	35	25	20	17	15	13	11	cents per pound.

Tinned, 5 cents per pound advance. 100 Papers in a Case.



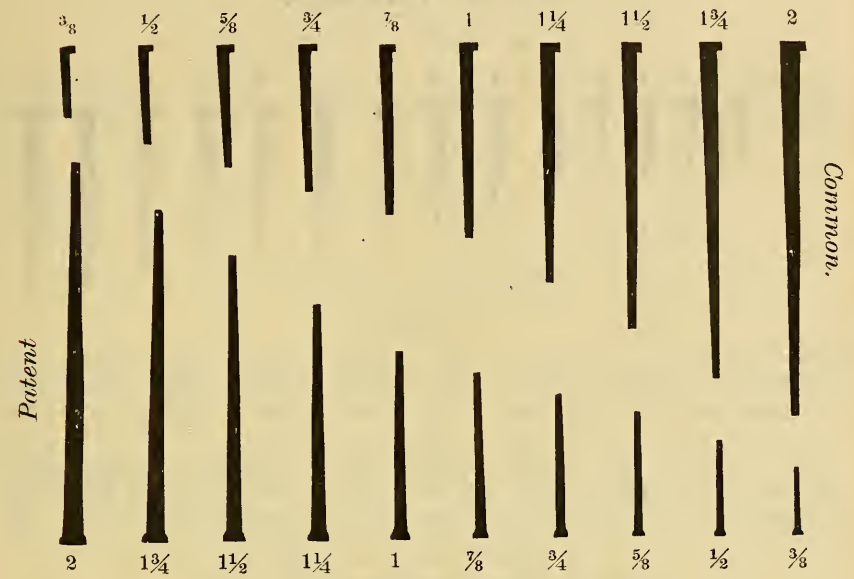
Trunk and Clout Nails.

In Pound Papers.

	⅜	½	⅝	¾	⅞	1	1¼	in. and longer.
Price----	35	25	20	17	15	13	11	cents per pound.

Tinned, 5 cents per pound advance. 100 Papers in a Case.

BRADS.



Common and Patent.

Inch.....	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2
Per dozen..	$0 96	0 96	1 08	1 20	1 32	1 56	1 92	2 40	3 00	3 60
" M	08	08	09	10	11	13	16	20	25	30

Full Weights at list. Half Weights 50 per cent. discount.

HUNGARIAN NAILS.

Ounce.....	4	6	8	10	12	14	16	18	20	
Full Weight ..	$1 20	1 44	1 68	1 92	2 16	2 40	2 64	2 88	3 12	per dozen.
Half " ..	60	72	84	96	1 08	1 20	1 32	1 44	1 56	"

CUT TACKS.

LIST PRICE.

Ounce	1	1½	2	2½	3	4	6	8
Per dozen	$0 84	0 84	0 84	0 96	1 08	1 20	1 44	1 68
" paper	07	07	07	08	09	10	12	14

Ounce	10	12	14	16	18	20	22	24
Per dozen	$1 92	2 16	2 40	2 64	2 88	3 12	3 36	3 60
Per paper	16	18	20	22	24	26	28	30

Assorted American Iron Cut Tacks.

QUARTER WEIGHT.

Ounce	3	4	6	8	10	12	} Contents of a Box.
Papers	5	15	30	30	15	5	}

Price per Box, $1 80. 10 Boxes in a Case.

Carpet Tacks.

LARGE HEAD, SWEDES IRON.

Ounce	3	4	6	8	10	12	14	16
Per dozen	$0 42	0 48	0 54	0 60	0 66	0 78	0 90	1 02
Per paper	03½	04	04½	05	05½	06½	07½	08½

AMERICAN AND CHARCOAL IRON.

Ounce	4	6	8	10	12	14	16
Per dozen	$0 42	0 48	0 54	0 60	0 66	0 78	0 90
Per paper	03½	04	04½	05	05½	06½	07½

Leathered Carpet Tacks.

Full count ..... 6, 8, 10 and 12 ounce ..... 25 cents per dozen.
100 in a paper ..... 6, 8, 10 " 12 " ..... 20 " "

TINNED TACKS.

All kinds except Gimp and Lace.

Ounce	1	1½	2	2½	3	4	6	8	
Full Weight	$1 20	1 20	1 20	1 32	1 44	1 68	1 92	2 16	per dozen.
Half "	60	60	60	66	72	84	96	1 08	"
Ounce	10	12	14	16	18	20	22	24	
Full Weight	$2 52	2 76	3 12	3 60	3 96	4 32	4 68	5 04	"
Half "	1 26	1 38	1 56	1 80	1 98	2 16	2 34	2 52	"

Gimp and Lace Tacks.

BLUED.

Ounce	1	1½	2	2½	3	4	6	
Full Weight	$0 72	0 72	0 84	0 90	1 02	1 14	1 32	per dozen.
Half "	36	36	42	45	51	57	66	"
Ounce	8	10	12	14	16	18		
Full Weight	$1 44	1 68	1 86	2 04	2 28	2 52		"
Half "	72	84	93	1 02	1 14	1 26		"

Gimp and Lace Tacks.

TINNED.

Ounce	1	1½	2	2½	3	4	6	8	
Full Weight	$1 32	1 32	1 32	1 44	1 56	1 80	2 04	2 28	per dozen.
Half "	66	66	66	72	78	90	1 02	1 14	"
Ounce	10	12	14	16	18	20	22	24	
Full Weight	$2 64	2 88	3 24	3 72	4 08	4 44	4 80	5 16	"
Half "	1 32	1 44	1 62	1 86	2 04	2 22	2 40	2 58	"

Lining and Saddle Nails.

COFFIN LINING NAILS.

3 and 4 oz., 100 to paper	5	cents.
3 " 4, " 75 "	4	"

SILVER OR JAPANNED SADDLE NAILS.

No. 1. 4 to 16 oz., 100 to paper	7	"
1. 4 " 16 " 75 "	5½	"
2. 8 " 24 " 100 "	8	"
2. 8 " 24 " 75 "	6½	"
3. 12 oz. to 1⅛ in., 100 to paper	10	"
3. 12 " " 1⅛ 75 "	8	"
4. 16 " " 1¼ 100 "	12	"
4. 16 " " 1¼ 75 "	9	½"
5. 16 " " 1¼ 100 "	14	"
5. 16 " " 1¼ 75 "	11	"
6. 16 " " 1¼ 100 "	16	"
6. 16 " " 1¼ 75 "	13	"

CAR NAILS.

Silver ..... 20 cents per paper.

SILVER MOULDINGS.

Oval.

Sizes	¼	5/16	⅜	7/16	½ in.
Price	11	13	15	16	17 cents per foot.

Angle.

Sizes	¼	5/16	⅜	7/16	½ in.
Price	14	16	19	21	24 cents per foot.

Above Moulding is made from heavy plate, and with good filling, not liable to break in bending.

PLATE AND BAND NAILS.

Name Plate.

Silver	25	cents per gross.
Oroide	25	" "
Gold	50	" "

Solid Band.

Silver	45	cents per gross.
Oroide	45	" "
Gold	75	" "

English Band.

Japanned	$0 65	per gross.
Silver	1 25	"
Gold	3 00	"

Heavy Band.

Silver Capped Heads	30	cents per gross.

RATTAN CARRIAGE MOULDING.

OVAL.

No. 6. $\frac{6}{32}$ in. dia.

$4 75 per 1000 feet.

No. 7. $\frac{7}{32}$ "

$6 00 per 1000 feet.

No. 8. $\frac{8}{32}$ "

$7 50 per 1000 feet.

No. 9. $\frac{9}{32}$ "

$9 75 per 1000 feet.

No. 10. $\frac{10}{32}$ "

$12 00 per 1000 feet.

No. 12. $\frac{12}{32}$ "

$16 50 per 1000 feet.

ANGLE.

No. 7. $\frac{7}{32}$ "

$6 00 per 1000 feet.

No 8. $\frac{8}{32}$ "

$7 50 per 1000 feet.

No. 9. $\frac{9}{32}$ "

$9 75 per 1000 feet.

No. 10. $\frac{10}{32}$ "

$12 00 per 1000 feet.

HALF SIZE.

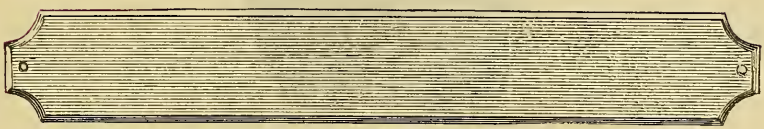
In Bunches of 500 feet.

SILVER NAME PLATES.

Oval Pattern.

Square Pattern.

Round Pattern.



Scroll Pattern.

Oval Pattern	$12 00	per gross.
Square "	12 00	"
Round "	15 00	"
Scroll "	15 00	"

Extra for Engraving Name.

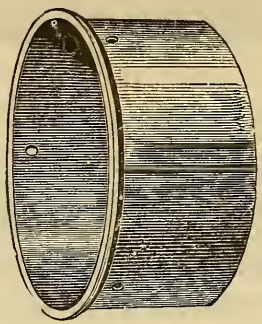
NAME PLATE NAILS.

Silver	25 cents	per gross.
Gold	50 "	"

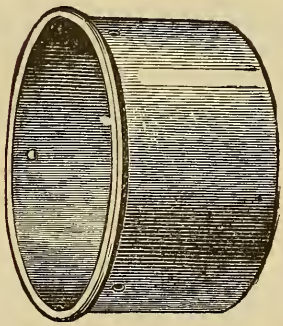
CARRIAGE RIM BANDS.

MALLEABLE IRON.

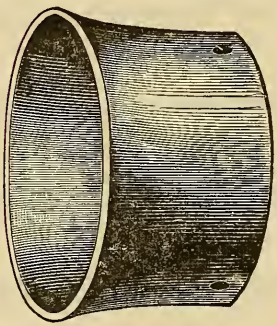
See List, following page.



Heavy Rim Pattern.



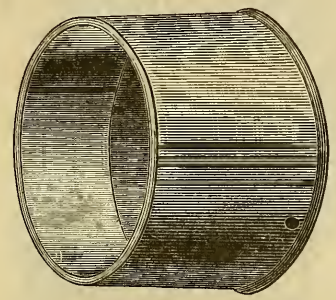
Cincinnati Pattern.



Bell Pattern.

Above are polished, ready for painting.

PLATED CARRIAGE BANDS.



Close Plated, Rim Pattern—Hand Plated with Heavy Silver

On Iron Heavy Rim.

PRICE PER SET.

DEPTH.	3 IN. OR UNDER.	3⅛	3¼	3⅜	3½	3⅝	3¾	3⅞	4
1½ in.	$3 00	$3 20	$3 40	$3 60	$3 80	$4 00	$4 20	$4 40	$4 60
1¾	3 30.	3 50	3 70	3 90	4 10	4 30	4 50	4 70	4 90
2	3 60	3 80	4 00	4 20	4 40	4 60			

On Composition Heavy Rim.

DEPTH.	3 IN. OR UNDER.	3⅛	3¼	3⅜	3½	3⅝	3¾	3⅞	4
1½ in.	$4 00	$4 20	$4 40	$4 60	$4 80	$5 00	$5 20	$5 40	$5 60
1¾	4 50	4 70	4 90	5 10	5 30	5 50	5 70	5 90	6 10
2	6 00	6 20	6 40	6 60	6 80	7 00	7 20	7 40	7 60
2¼	7 00	7 20	7 40	7 60	7 80	8 00	8 20	8 40	8 60
2½	8 00	8 20	8 40	8 60	8 80	9 00	9 20	9 40	9 60

MALLEABLE IRON BANDS.

Turned and Drilled, ready for Painting.

PRICE PER SET.

DEPTH.	3 IN. OR UNDER.	3⅛	3¼	3⅜	3½	3⅝	3¾	3⅞	4	
1½ in. Rim	40	45	50	55	60	65	70	75	80	cts.
1¾	45	50	55	60	65	70	75	80	85	
2	50	55	60	65	70	75	80	85	90	
2¼	60	65	70	75	80	85	90	95	100	
2½	75	80	85	90	95	100	105	110	115	
1¾ Bell	50	55	60	65	70					

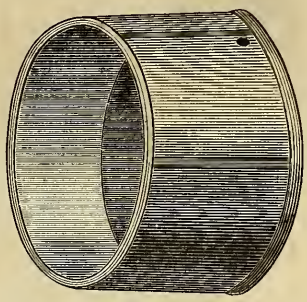
SOLID BAND NAILS.

With Fine Burnished Heads.

One Gross in a Box.

Silver....45 cts. Oroide....45 cts. Gold....75 cts. per gross.

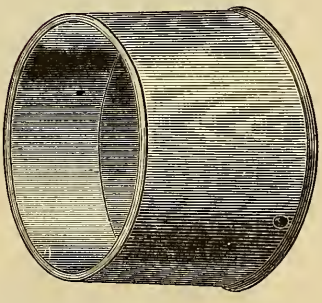
PLATED CARRIAGE BANDS.



Heavy Rim—Silver, Oroide or Gold Finish.

PRICE PER SET.

DEPTH.	3 IN. OR UNDER.	3⅛	3¼	3⅜	3½	3⅝	3¾	3⅞	4	4⅛	4¼	4⅜	4½
1¼ in.	$1.70	1.90	2.10	2.30	2.50	2.70	2.90	3.10	3.30				
1½	1.90	2.10	2.30	2.50	2.70	2.90	3.10	3.30	3.50	3.90	4.30	4.70	5.10

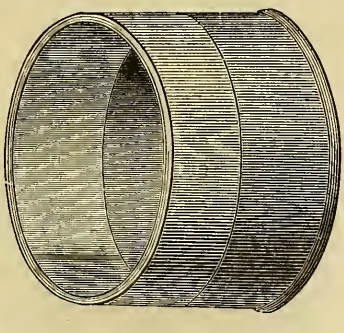


Cincinnati Rim—Silver, Oroide, or Gold Finish.

PRICE PER SET.

DEPTH.	3 IN. OR UNDER.	3⅛	3¼	3⅜	3½	3⅝	3¾	3⅞	4	4⅛	4¼	4⅜	4½
1¾ in.	$2.60	2.80	3.00	3.20	3.40	3.60	3.80	4.00	4.20	4.60	5.00	5.40	5.80
2	3.50	3.90	4.30	4.70	5.10	5.50	5.90	6.30	6.70	7.10	7.50	7.90	8.30
2¼	4.50	4.90	5.30	5.70	6.10	6.50	6.90	7.30	7.70	8.10	8.50	8.90	9.30
2½	6.00	6.40	6.80	7.20	7.60	8.00	8.40	8.80	9.20	9.60	10.00	10.40	10.80
3	8.00	8.50	9.00	9.50	10.00	10.50	11.00	11.50	12.00	12.50	13.00	13.50	14.00

PLATED CARRIAGE BANDS.

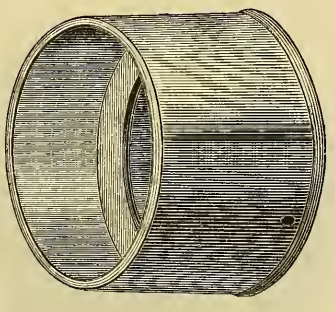


Cincinnati Rim, Ribbon Edge—Silver, Oroide or Gold Finish.

Full Finish, or Inside and Ribbon Edge Only.

PRICE PER SET.

DEPTH.	3 IN. OR UNDER.	3⅛	3¼	3⅜	3½	3⅝	3¾	3⅞	4	4⅛	4¼	4⅜	4½
1¾ in.	$2.60	2.80	3.00	3.20	3.40	3.60	3.80	4.00	4.20	4.60	5.00	5.40	5.80
2	3.50	3.90	4.30	4.70	5.10	5.50	5.90	6.30	6.70	7.10	7.50	7.90	8.30
2¼	4.50	4.90	5.30	5.70	6.10	6.50	6.90	7.30	7.70	8.10	8.50	8.90	9.30
2½	6.00	6.40	6.80	7.20	7.60	8.00	8.40	8.80	9.20	9.60	10.00	10.40	10.80
3	8.00	8.50	9.00	9.50	10.00	10.50	11.00	11.50	12.00	12.50	13.00	13.50	14.00



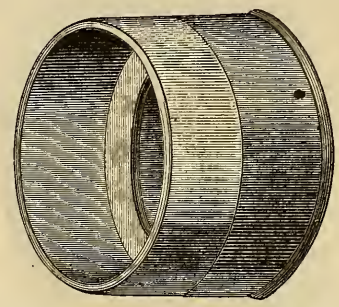
Central Park—Silver, Oroide or Gold Finish.

Full Finish, or Inside Only.

PRICE PER SET.

DEPTH.	3 IN. OR UNDER.	3⅛	3¼	3⅜	3½	3⅝	3¾	3⅞	4	4⅛	4¼	4⅜	4½
1½ in.	$2.80	3.00	3.20	3.40	3.60	3.80	4.00	4.20	4.40	4.80	5.20	5.60	6.00
1¾	3.50	3.70	3.90	4.10	4.30	4.50	4.70	4.90	5.10	5.50	5.90	6.30	6.70
2	4.50	4.90	5.30	5.70	6.10	6.50	6.90	7.30	7.70	8.10	8.50	8.90	9.30
2¼	7.00	7.50	8.00	8.50	9.00	9.50	10.00	10.50	11.00	11.50	12.00	12.50	13.00

PLATED CARRIAGE BANDS.

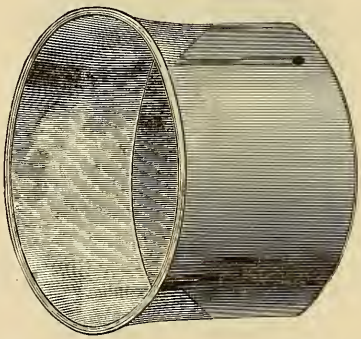


Central Park, Ribbon Edge—Silver, Oroide or Gold Finish.

Full Finish, or Inside and Ribbon Edge Only.

PRICE PER SET.

DEPTH.	3 IN. OR UNDER.	3⅛	3¼	3⅜	3½	3⅝	3¾	3⅞	4	4⅛	4¼	4⅜	4½
1½ in.	$2.80	3.00	3.20	3.40	3.60	3.80	4.00	4.20	4.40	4.80	5.20	5.60	6.00
1¾	3.50	3.70	3.90	4.10	4.30	4.50	4.70	4.90	5.10	5.50	5.90	6.30	6.70
2	4.50	4.90	5.30	5.70	6.10	6.50	6.90	7.30	7.70	8.10	8.50	8.90	9.30
2¼	7.00	7.50	8.00	8.50	9.00	9.50	10.00	10.50	11.00	11.50	12.00	12.50	13.00

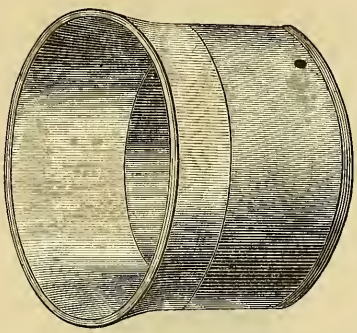


Plain Bell Front—Silver, Oroide or Gold Finish.

PRICE PER SET.

DEPTH.	3 IN. OR UNDER.	3⅛	3¼	3⅜	3½
1¾ in. Inside Finish	$2.80	$3.00	$3.20	$3.40	$3.60
1¾ Full "	2.80	3.00	3.20	3.40	3.60

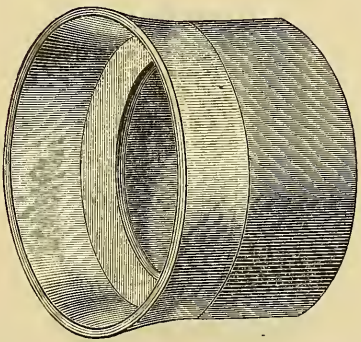
PLATED CARRIAGE BANDS.



Bell Front, Ribbon Edge—Silver, Oroide or Gold Finish.

PRICE PER SET.

DEPTH.	3 IN. OR UNDER.	3⅛	3¼	3⅜	3½
1¾ in. Inside Finish	$2 80	$3 00	$3 20	$3 40	$3 60
1¾ Full "	2 80	3 00	3 20	3 40	3 60

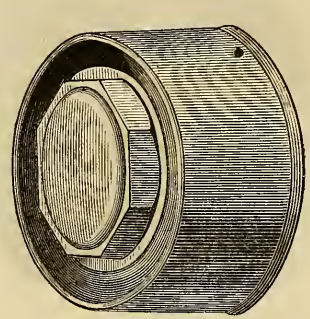


Central Park, Bell Front, Ribbon Edge—Silver, Oroide or Gold Finish.

PRICE PER SET.

DEPTH.	3 IN. OR UNDER.	3⅛	3¼	3⅜	3½
1¾ in. Inside Finish	$3 80	$4 00	$4 20	$4 40	$4 60
1¾ Full "	3 80	4 00	4 20	4 40	4 60

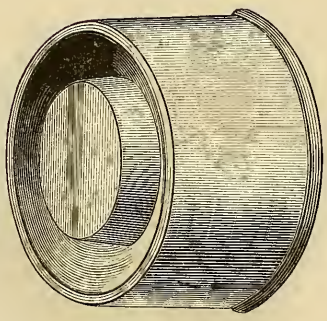
PLATED CARRIAGE BANDS.



Philadelphia Screw—Silver, Oroide or Gold Finish.

PRICE PER SET.

3 IN. OR UNDER.	3 1/8	3 1/4	3 3/8	3 1/2	3 5/8	3 3/4	3 7/8	4	4 1/8	4 1/4	4 3/8	4 1/2
$4.00	4.20	4.40	4.60	4.80	5.00	5.20	5.40	5.60	6.00	6.40	6.80	7.20



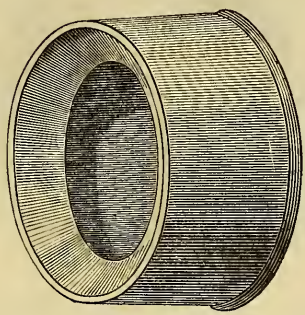
Coach Bands—Silver, Oroide or Gold Finish.

FOR PATENT OR MAIL AXLES.

PRICE PER SET.

DEPTH.	3 IN. OR UNDER.	3 1/8	3 1/4	3 3/8	3 1/2	3 5/8	3 3/4	3 7/8	4	4 1/8	4 1/4	4 3/8	4 1/2
1 1/2 in.	$4.80	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.80	7.20	7.60	8.00

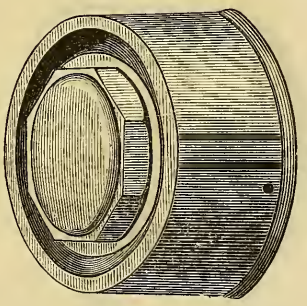
PLATED CARRIAGE BANDS.



Heavy Philadelphia—Silver, Oroide or Gold Finish.

PRICE PER SET.

DEPTH.	3 IN. OR UNDER.	3⅛	3¼	3⅜	3½	3⅝	3¾	3⅞	4	4⅛	4¼	4⅜	4½
1¼ in.	$1.70	1.90	2.10	2.30	2.50	2.70	2.90	3.10	3.30				
1½ Heavy,	1.90	2.10	2.30	2.50	2.70	2.90	3.10	3.30	3.50	3.90	4.30	4.70	5.10

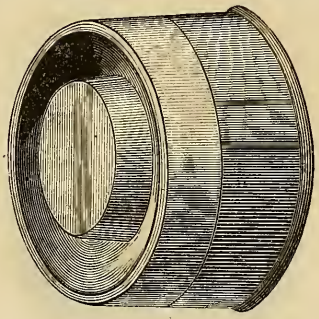


Empire Screw Bands—Silver, Oroide or Gold Finish.

PRICE PER SET.

3 IN. OR UNDER.	3⅛	3¼	3⅜	3½	3⅝	3¾	3⅞	4	4⅛	4¼	4⅜	4½
$3.60	3.80	4.00	4.20	4.40	4.60	4.80	5.00	5.20	5.60	6.00	6.40	6.80

PLATED CARRIAGE BANDS.



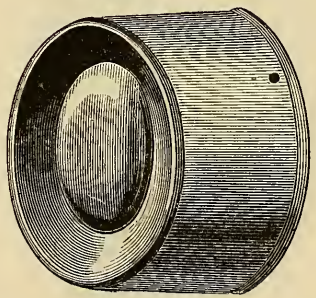
Coach Bands, Ribbon Edge—Silver, Oroide or Gold Finish.

FOR PATENT OR MAIL AXLES.

Full Finish, or Front and Ribbon Edge Only.

PRICE PER SET.

	3 IN. OR UNDER.	3⅛	3¼	3⅜	3½	3⅝	3¾	3⅞	4	4⅛	4¼	4⅜	4½
Silver Front,	$4.80	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.80	7.20	7.60	8.00
Full Silver,	4.80	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.80	7.20	7.60	8.00



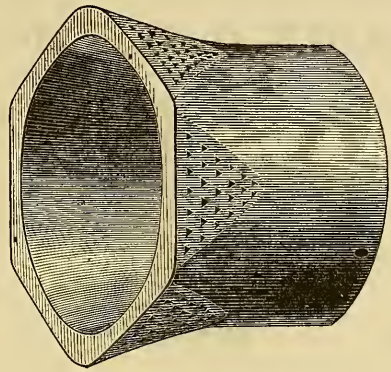
Reflector Bands—Silver, Oroide or Gold Finish.

FOR PATENT OR MAIL AXLES.

PRICE PER SET.

3 IN. OR UNDER.	3⅛	3¼	3⅜	3½	3⅝	3¾	3⅞	4	4⅛	4¼	4⅜	4½
$3.50	3.70	3.90	4.10	4.30	4.50	4.70	4.90	5.10	5.50	5.90	6.30	6.70

PLATED CARRIAGE BANDS.

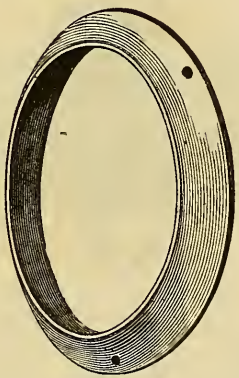


Rockaway—Silver, Oroide or Gold Finish.

Two Round and Two Octagon Make a Set.

PRICE PER SET.

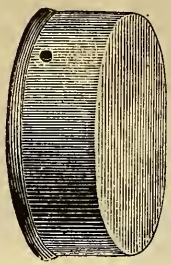
DEPTH.	3 IN. OR UNDER.	3⅛	3¼	3⅜	3½
2 in.	$ 7 00	$7 80	$ 8 60	$ 9 40	$10 20
2¼	9 00	9 80	10 60	11 40	12 20
2½	12 00	12 80	13 60	14 40	15 20
3	16 00	17 00	18 00	19 00	20 00



Sand Bands—Silver, Oroide or Gold Finish.

3 IN. OR UNDER.	3¼	3½	3¾	4
$0 80	$0 90	$1 00	$1 10	$1 20

MALLEABLE IRON CAP BANDS.

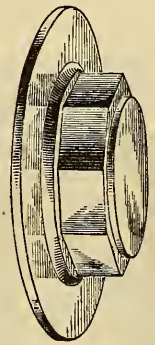


Turned, Drilled and Lacquered, for Patent or Mail Axle.

Diameter	2¾	2⅞	3	3⅛	3¼	3⅜	3½
Per Set	$0 50	0 50	0 50	0 55	0 60	0 65	0 70

3⅝	3¾	3⅞	4	4⅛	4¼	4⅜	4½
0 75	0 80	0 85	0 90	0 95	1 00	1 05	1 10

OCTAGON HUB CAPS.

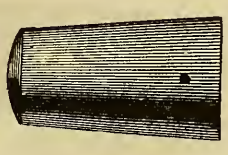


Extra Heavy. Brass, Silver, Oroide or Gold.

Diameter	3 in. or under.	3⅛	3¼	3⅜	3½	3⅝	3¾	3⅞	4
Per Set	$4 50	4 70	4 90	5 10	5 30	5 50	5 90	5 90	6 10

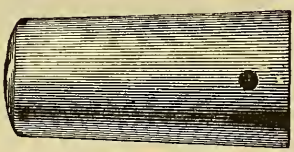
With Round Head Screws extra, 50 cents per Set.

PLATED SHAFT TIPS.



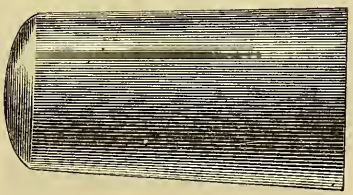
No. 50. Plain.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$2 10	2 20	2 45	per dozen pairs.
Oroide	2 10	2 20	2 45	" "



No. 80. Plain.

SIZES,	¾	⅞	1	1⅛	1¼	IN. INSIDE.
Silver	$2 55	2 70	3 00	3 50	4 00	per dozen pairs.
Oroide	2 55	2 70	3 00	3 50	4 00	" "
Gold	3 50	3 75	4 25	4 75	5 50	" "

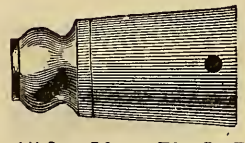


No. 100. Plain.

SIZES,	¾	⅞	1	1⅛	1¼	IN. INSIDE.
Silver	$4 00	4 50	5 25	6 00	7 00	per dozen pairs.
Oroide	4 00	4 50	5 25	6 00	7 00	" "
Gold	5 50	6 00	6 75	7 50	8 25	" "

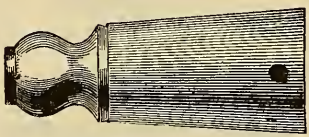
Above Cuts are Two-thirds Size of ⅞ in.

PLATED SHAFT TIPS.



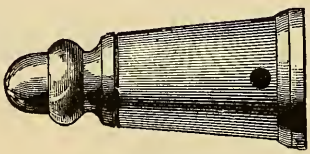
No. 150. New York Ball.

	SIZES, ¾	⅞	1	1⅛	1¼	IN. INSIDE.
Silver	$3 25	3 50	3 85	4 40	5 00	per dozen pairs.



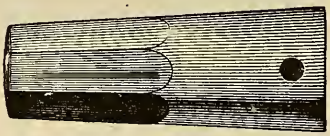
No. 200. Chicago Ball.

	SIZES, ¾	⅞	1	1⅛	1¼	IN. INSIDE.
Silver	$5 00	5 25	5 75	6 50	7 50	per dozen pairs.
Oroide	5 00	5 25	5 75	6 50	7 50	" "
Gold	6 50	7 00	7 75	8 50	9 25	" "



No. 250. Acorn End.

	SIZES, ⅞	1	1⅛	IN. INSIDE.
Silver	$5 50	6 00	6 75	per dozen pairs.
Oroide	5 50	6 00	6 75	" "
Gold	7 50	8 00	9 00	" "

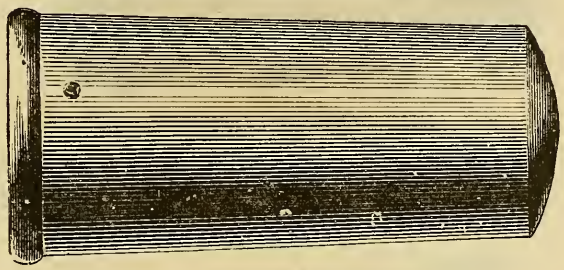


No. 300. Octagon End.

	SIZES, ¾	⅞	1	IN. INSIDE.
Silver	$10 00	11 50	14 00	per dozen pairs.
Oroide	10 00	11 50	14 00	" "
Gold	12 00	14 00	16 50	" "

Above Cuts are Two-thirds Size of ⅞ in.

EXPRESS SHAFT TIPS.

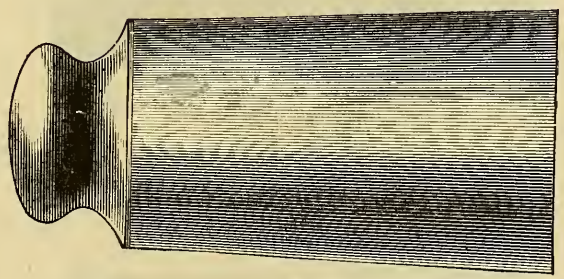


No. 360.

1⅛ Inch. Full Size.

This Pattern is also frequently used for Pole Tips.

SIZES,	1⅛	1¼	1⅜	1½	1⅝	IN. INSIDE.
Brass	$11 00	12 00	13 00	14 50	16 00	per dozen pairs.
Silver	11 00	12 00	13 00	14 50	16 00	" "
Oroide	11 00	12 00	13 00	14 50	16 00	" "
Gold	13 00	14 25	15 50	17 00	18 00	" "



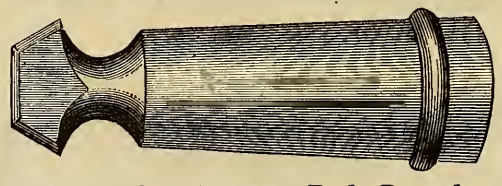
No. 390.

1¼ Inch. Full Size.

This Pattern is also frequently used for Pole Tips.

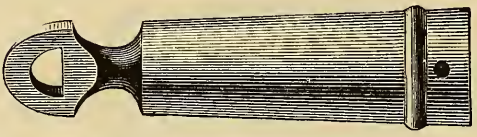
SIZES,	1⅛	1¼	1⅜	1½	1⅝	IN. INSIDE.
Brass	$11 00	12 00	13 00	14 50	16 00	per dozen pairs.
Silver	11 00	12 00	13 00	14 50	16 00	" "
Oroide	11 00	12 00	13 00	14 50	16 00	" "
Gold	13 00	14 25	15 50	17 00	18 00	" "

PLATED WHIFFLETREE TIPS.



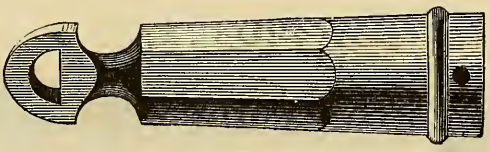
No. 400. Octagon End, Round.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$10 50	$11 00	$13 00	per doz. pairs.
Oroide	10 50	11 00	13 00	" "
Gold	14 00	15 00	17 00	" "



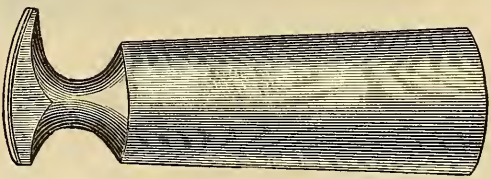
No. 450. Cock-Eye End, Round.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$10 50	$11 00	$13 00	per doz. pairs.
Oroide	10 50	11 00	13 00	" "
Gold	14 00	15 00	17 00	" "



No. 500. Cock-Eye End, Octagon.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$15 00	$16 00	$20 00	per doz. pairs.
Oroide	15 00	16 00	20 00	" "
Gold	18 00	19 00	24 00	" "

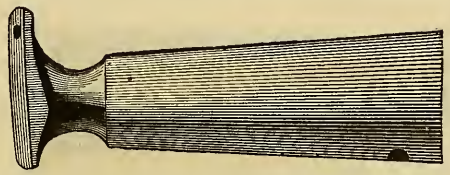


No. 550. L End, Round, New.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$10 50	$11 00	$13 00	per doz. pairs.
Oroide	10 50	11 00	13 00	" "
Gold	14 00	15 00	17 00	" "

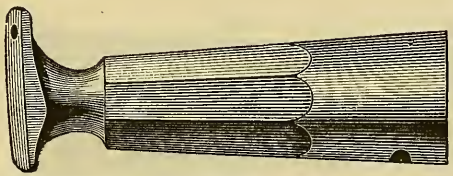
Above Cuts are Two-thirds Size of ⅞ in.

PLATED WHIFFLETREE TIPS.



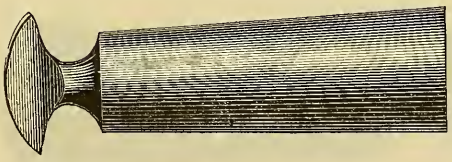
No. 600. L End, Round.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$10 50	$11 00	$13 00	per doz. pairs.
Oroide	10 50	11 00	13 00	" "
Gold	14 00	15 00	17 00	" "



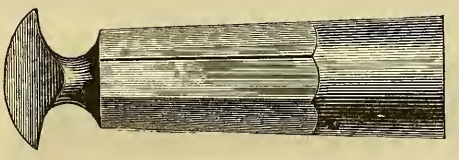
No. 650. L End, Octagon.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$15 00	$16 00	$20 00	per doz. pairs.
Oroide	15 00	16 00	20 00	" "
Gold	18 00	19 00	24 00	" "



No. 700. Fan Tail, Round.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$10 50	$11 00	$13 00	per doz. pairs.
Oroide	10 50	11 00	13 00	" "
Gold	14 00	15 00	17 00	" "

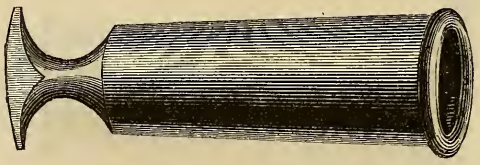


No. 750. Fan Tail, Octagon.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$15 00	$16 00	$20 00	per doz. pairs.
Oroide	15 00	16 00	20 00	" "
Gold	18 00	19 00	24 00	" "

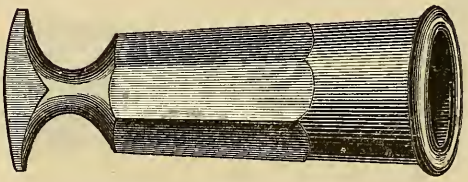
Above Cuts are Two-thirds Size of ⅞ in.

PLATED WHIFFLETREE TIPS.



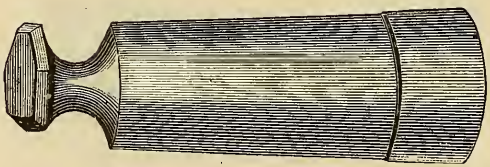
No. 800. T End, Round.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$10 50	$11 00	$13 00	per doz. pairs.
Oroide	10 50	11 00	13 00	" "
Gold	14 00	15 00	17 00	" "



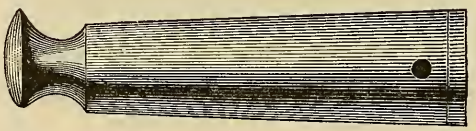
No. 850. T End, Octagon.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$15 00	$16 00	$20 00	per doz. pairs.
Oroide	15 00	16 00	20 00	" "
Gold	18 00	19 00	24 00	" "



No. 900. Octagon Button End.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$10 50	$11 00	$13 00	per doz. pairs.
Oroide	10 50	11 00	13 00	" "
Gold	14 00	15 00	17 00	" "



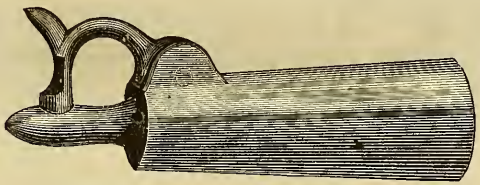
No. 950. Round Button End.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$9 00	$10 00	$12 00	per doz. pairs.
Oroide	9 00	10 00	12 00	" "
Gold	13 00	14 00	16 00	" "

Above Cuts are Two-thirds Size of ⅞ in.

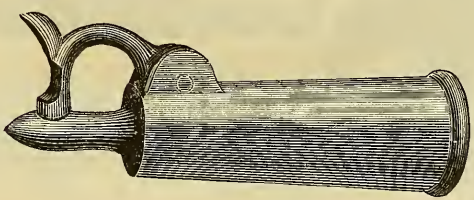
PLATED WHIFFLETREE TIPS.

GRIGG'S PATENT.



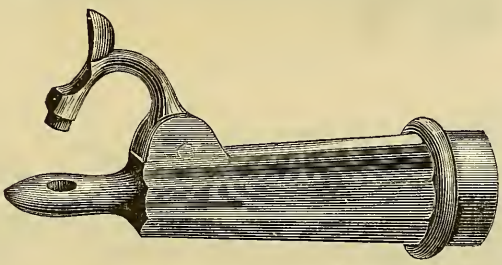
No. 960. Plain Round.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$20 00	21 00	22 00	per dozen pairs.
Oroide	20 00	21 00	22 00	" "
Gold	30 00	31 00	32 00	" "



No. 975. Round with Bead.

SIZES,	⅜	⅞	1	IN. INSIDE.
Silver	$20 00	21 00	22 00	per dozen pairs.
Oroide	20 00	21 00	22 00	" "
Gold	30 00	31 00	32 00	" "



No. 990. Octagon.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$24 00	25 00	26 00	per dozen pairs.
Oroide	24 00	25 00	26 00	" "
Gold	35 00	36 00	38 00	" "

The above cuts show the safety and convenience of this most useful invention, as the harness trace can only be removed by lifting the hook, kept in place by a spiral spring (which is invisible), thus keeping it free from dirt and in perfect order. It is simple in construction and perfectly secure.

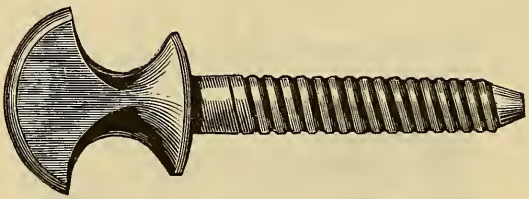
Above Cuts are Two-Thirds Size of ⅞ in.

PLATED WHIFFLETREE TIPS.

TO SCREW.

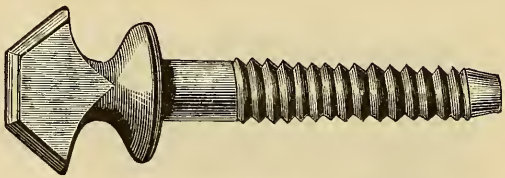
No. 1000.

Silver	$7 50	per doz. pairs.
Oroide	7 50	" "
Gold	9 50	" "



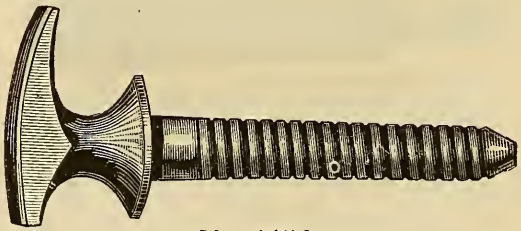
No. 1050.

Silver	$7 50	per doz. pairs.
Oroide	7 50	" "
Gold	9 50	" "



No. 1100.

Silver	$7 50	per doz. pairs.
Oroide	7 50	" "
Gold	9 50	" "

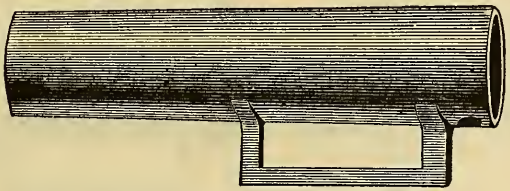


No. 1150.

Silver	$7 50	per doz. pairs.
Oroide	7 50	" "
Gold	9 50	" "

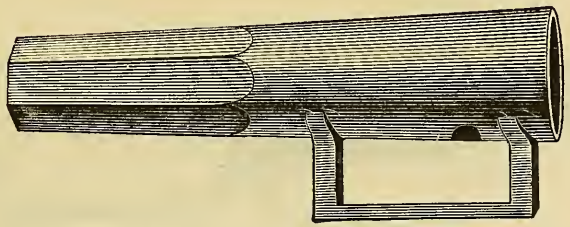
Above Cuts are Full Size.

PLATED NECK YOKE TIPS.



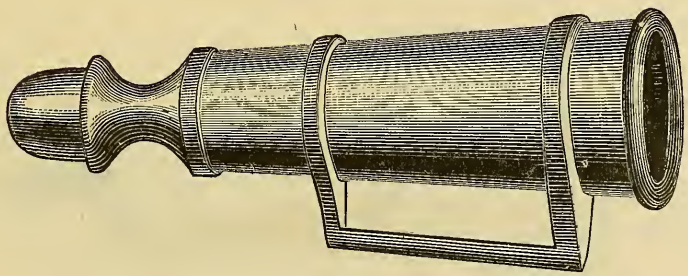
No. 1200. Extra Heavy, Plain.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$11 50	$12 00	$15 00	per doz. pairs.
Oroide	11 50	12 00	15 00	" "
Gold	15 50	16 00	20 00	" "



No. 1250. Extra Heavy, Octagon.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$21 00	$22 00	$25 00	per doz. pairs.
Oroide	21 00	22 00	25 00	" "
Gold	27 00	28 00	31 00	" "

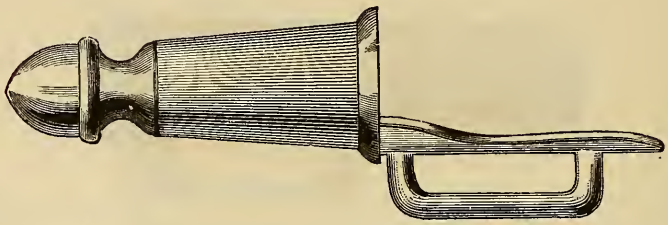


No. 1300. Acorn End, Lincoln Park Pattern.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$11 50	$12 00	$15 00	per doz. pairs.
Oroide	11 50	12 00	15 00	" "
Gold	15 50	16 00	20 00	" "

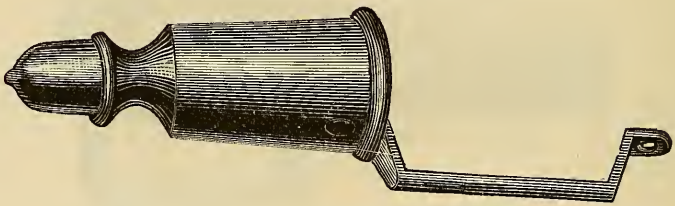
Above Cuts are Two-thirds Size of ⅞ in.

PLATED NECK YOKE TIPS.



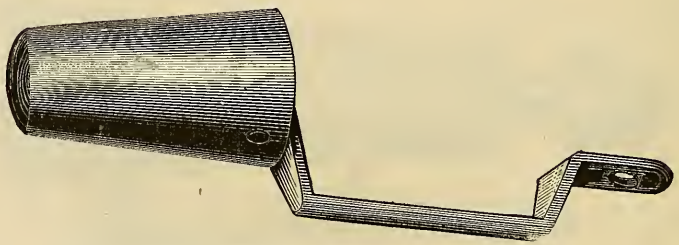
No. 1350. Acorn End, with Round Wrought Loop.

	SIZES, ¾	⅞	1	IN. INSIDE.
Silver	$10 50	$11 00	$14 00	per doz. pairs.
Oroide	10 50	11 00	14 00	" "
Gold	14 50	15 00	19 00	" "



No. 1400. Acorn End, with Flat Loop.

	SIZES, ¾	⅞	1	IN. INSIDE.
Silver	$10 50	$11 00	$14 00	per doz. pairs.
Oroide	10 50	11 00	14 00	" "
Gold	14 50	15 00	19 00	" "

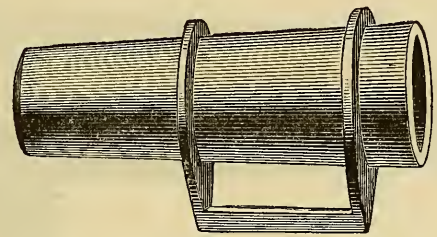


No. 1450. Plain End, with Flat Loop.

	SIZES, ¾	⅞	1	IN. INSIDE.
Silver	$10 50	$11 00	$14 00	per doz. pairs.
Oroide	10 50	11 00	14 00	" "
Gold	14 50	15 00	19 00	" "

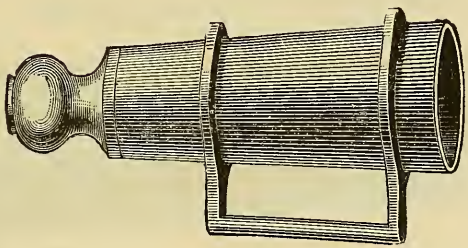
Above Cuts are Two-thirds Size of ⅞ in.

PLATED NECK YOKE TIPS.



No. 1500. Lincoln Park Pattern, Plain.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$10 50	11 00	14 00	per dozen pairs.
Oroide	10 50	11 00	14 00	" "
Gold	14 50	15 00	19 00	" "

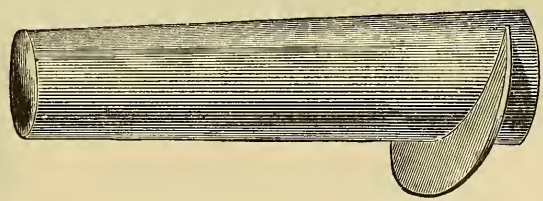


No. 1550. Union Park Ball Pattern.

SIZES,	¾	⅞	1	IN. INSIDE.
Silver	$10 50	11 00	14 00	per dozen pairs.
Oroide	10 50	11 00	14 00	" "
Gold	14 50	15 00	19 00	" "

Above Cuts are Two-thirds Size of ⅞ in.

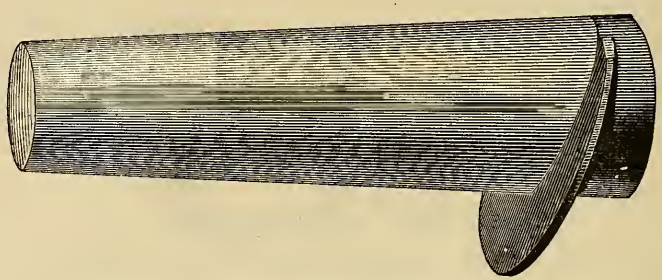
FLANGED POLE TIPS.



No. 1600. Malleable Iron.

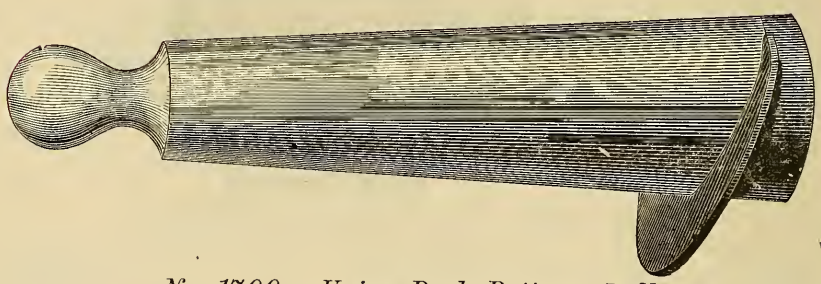
SIZES,	1	1⅛	1¼	1⅜	1½	IN. INSIDE.
Lengths	4½	4¾	5	5¼	5½	in.
Polished Bright	$2 75	3 00	3 50	4 00	4 50	per dozen.
Japanned	3 00	3 50	4 00	4 50	5 00	"

PLATED POLE SOCKETS.



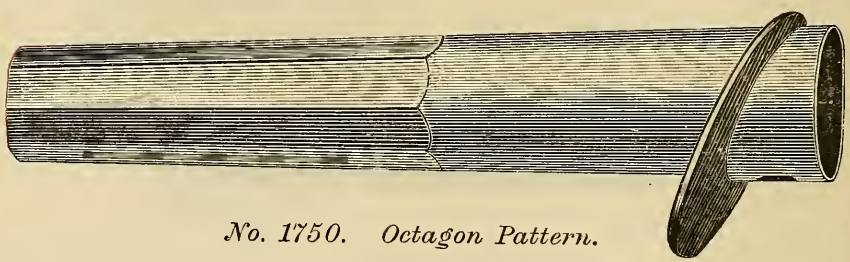
No. 1650. Lincoln Park Pattern, Plain.

SIZES,	1⅛	1¼	1⅜	1½	IN. INSIDE.
Silver	$13 50	$14 50	$16 00	$18 00	per doz.
Oroide	13 50	14 50	16 00	18 00	"
Gold	15 00	16 00	18 00	20 00	"



No. 1700. Union Park Pattern, Ball.

SIZES,	1⅛	1¼	1⅜	1½	IN. INSIDE.
Silver	$14 50	$15 50	$17 00	$19 00	per doz.
Oroide	14 50	15 50	17 00	19 00	"
Gold	16 00	18 00	20 00	22 00	"

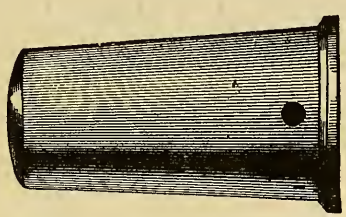


No. 1750. Octagon Pattern.

SIZES,	1⅛	1¼	IN. INSIDE.
Silver	$23 00	$24 00	per doz.
Oroide	23 00	24 00	"
Gold	27 00	28 00	"

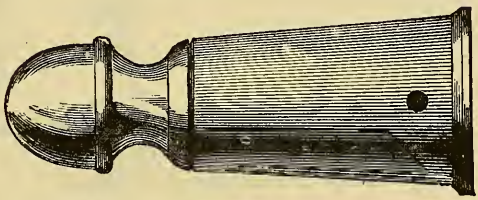
Above Cuts are Two-thirds Size of 1¼ in.

PLATED POLE SOCKETS.



No. 1800. Plain Short Pattern.

	SIZES,	1⅛	1¼	1⅜	1½	IN. INSIDE.
Silver		$4 50	5 00	5 50	6 00	per dozen.
Oroide		4 50	5 00	5 50	6 00	"

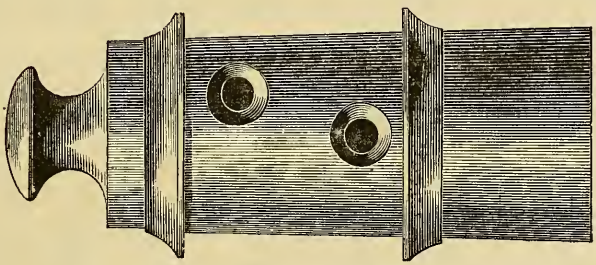


No. 1850. Ball End, Short Pattern.

	SIZES,	1⅛	1¼	1⅜	1½	IN. INSIDE.
Silver		$5 50	6 25	7 00	8 00	per dozen.
Oroide		5 50	6 25	7 00	8 00	"

Above Cuts are Two-thirds Size of 1¼ in.

COACH WHIFFLETREE TIP.



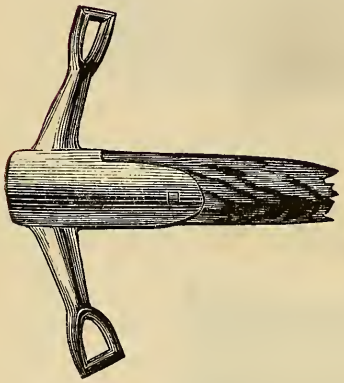
No. 1900. Flanged.

	SIZES,	1	1⅛	1¼	IN. INSIDE.
Silver		$14 75	16 50	17 25	per dozen pairs.
Oroide		14 75	16 50	17 25	" "
Gold		17 25	19 00	20 00	" "

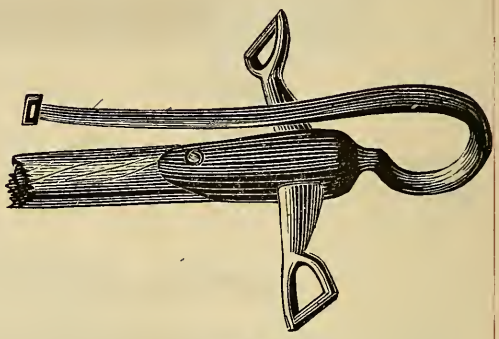
Above Cut is Two-thirds Size of 1¼ in.

PLATED POLE CRABS.

FOUR SIZES.



PLAIN.



WITH HOOK.

With Wrought Iron Hook.

PRICE EACH.

SIZES,	1¼	1⅜	1½	1⅝	in. hole.
Lengths	10½	11	11	11⅜	in.
Close Plate Silver	$8 50	8 50	9 00	9 50	each.
" Oroide	8 50	8 75	9 25	9 75	"
Oroide and Gold	11 00	11 25	11 75	12 00	"
Nickel	9 00	9 25	10 00	11 00	"

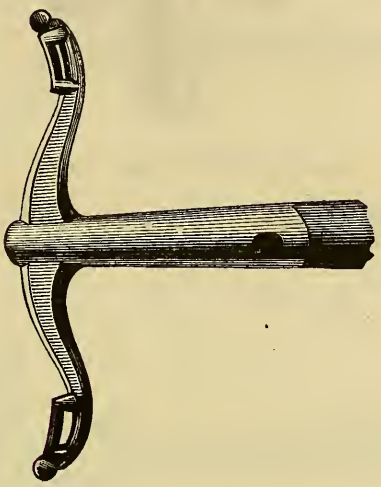
Plain, without Hook.

PRICE EACH.

SIZES,	1¼	1⅜	1½	1⅝	in. hole.
Lengths	10½	11	11	11⅜	in.
Close Plate Silver	$2 25	2 50	2 75	3 00	each.
" Oroide	2 50	2 75	3 00	3 25	"
Oroide and Gold	5 00	5 25	5 50	6 00	"
Nickel	4 00	4 25	4 50	5 00	"

PLATED POLE CRABS.

TWO SIZES.



Plain, without Hook.

PRICE EACH.

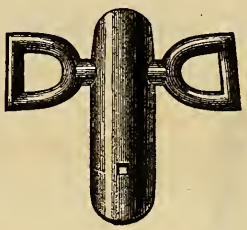
SIZES,	1⅜	1⅝	in.
Length of Arms	15	18	in.
Close Plate Silver	$ 6 50	$ 7 50	each.
Close Plate Oroide	7 00	8 00	"
Oroide and Gold	10 00	11 00	"
Nickel	8 00	9 00	"

With Wrought Iron Hook.

PRICE EACH.

SIZES,	1⅜	1⅝	in.
Length of Arms	15	18	in.
Close Plate Silver	$11 00	$12 00	each.
Close Plate Oroide	11 50	12 50	"
Oroide and Gold	15 00	16 00	"
Nickel	13 25	14 25	"

ENGLISH POLE CRABS.



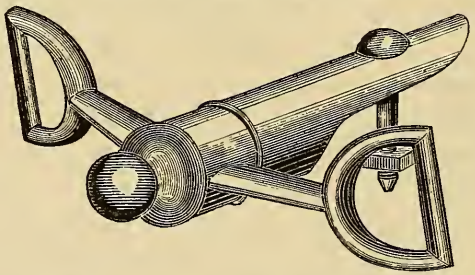
No. 139. New Style.

	SIZES, 1⅜ IN.	1½ IN.	
Solid Oroide, Fine Finished	$3 75	$4 00	each.
" " Electro-Silver Plated	4 00	4 25	"
" " Close " "	4 25	4 50	"
" " Gold Plated	5 75	6 00	"
Malleable Iron, Close Silver Plated	2 75	3 00	"
" " " Oroide "	3 00	3 25	"

With Loose Hook.

	SIZES, 1⅜ IN.	1½ IN.	
Solid Oroide, Fine Finished	$6 00	$6 25	each.
" " Electro Silver Plated	6 25	6 50	"
" " Gold Plated	9 00	9 25	"
Malleable Iron, Close Silver Plated	5 00	5 25	"
" " " Oroide "	5 25	5 50	"

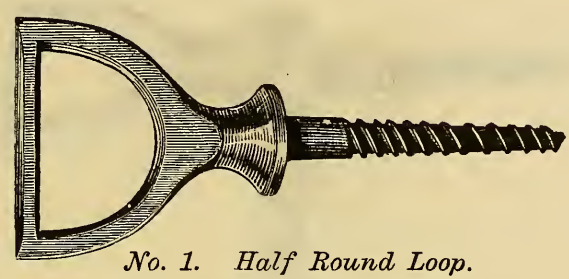
FRENCH SWIVEL POLE CRABS.



No. 364. Solid Oroide, Short Pods.

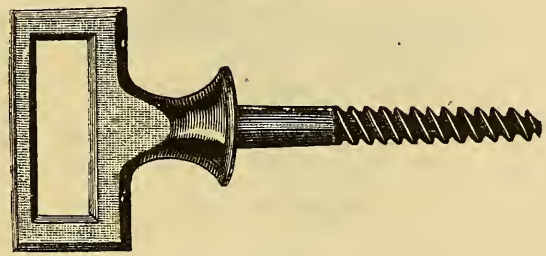
1½ in. Pod, Arms and Knob, Full Finished	$5 50
1½ " " " " Close Silver	6 50
1½ " " " " Gold	8 50
1¾ " " and Hook, " Finished	6 00
1¾ " " " " Silver	7 00
1¾ " " " " Gold	9 00
1½ " " and Knob only, Close Silver	5 25
1½ " " " " Gold	6 50
1¾ " " " " Close Silver	5 75
1¾ " " " " Gold	7 00
1½ Crab and Hook, Arms and Hook only, Close Silver	7 50
1½ " " " " " Gold	9 50
1½ " " " Pod, Arms, Hook, Full Finished	8 00
1½ " " " " " " Close Silver	9 50
1½ " " " " " " Gold	11 00

FOOTMAN HOLDER LOOPS.



No. 1. Half Round Loop.

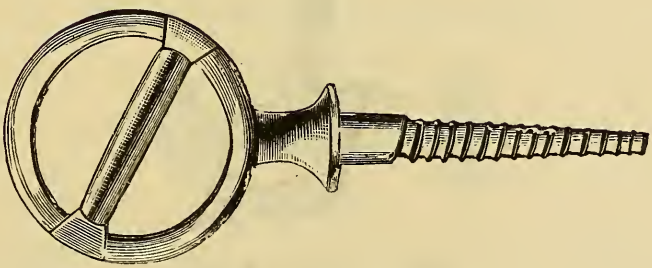
Plated in	Silver.	Oroide.	Gold.	Nickel.	Japanned.	
Price	65	65	75	70	35	cents per pair



No. 2. Square Loop.

Plated in	Silver.	Oroide.	Gold.	Nickel.	Japanned.	
Price	65	65	75	70	35	cents per pair.

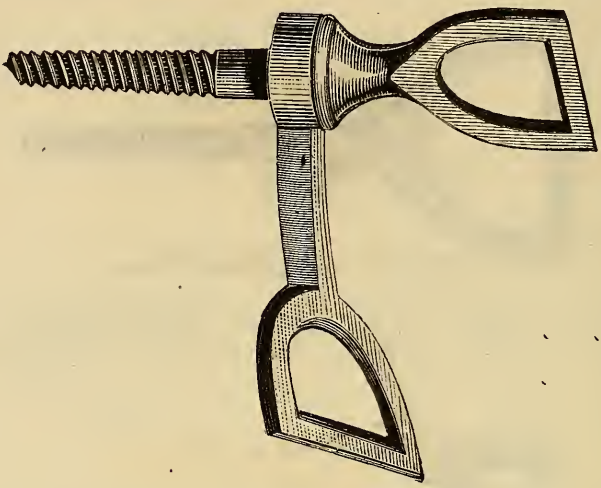
Sizes, ¾, ⅞, 1, 1⅛, 1¼ in., all one price.



No. 3. Round Loop.

Plated in	Silver.	Oroide.	Gold.	Nickel.	Japanned.	
Price	$1 00	1 00	1 25	0 90	0 70	per pair.

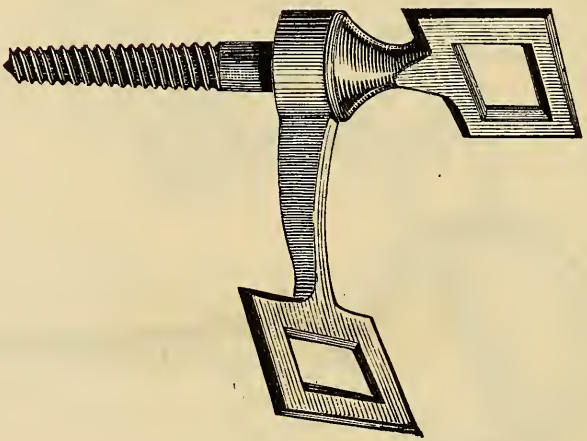
FOOTMAN HOLDER LOOPS.



No. 4. Half Round Loops.

Plated in	Silver.	Oroide.	Gold.	Nickel.	Japanned.
Price	$1 30	1 30	1 60	1 50	1 00 per set.

Only one size, 1 inch.

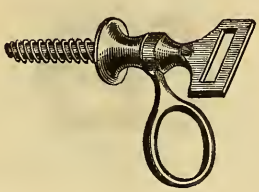


No. 5. Square Loops.

Plated in	Silver.	Oroide.	Gold.	Nickel.	Japanned.
Price	$1 30	1 30	1 60	1 50	1 00 per set.

Five sizes, ¾, ⅞, 1, 1⅛, 1¼ in., all one price.

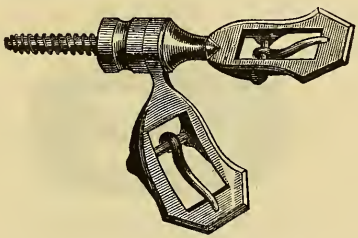
DOUBLE CROSS STRAP LOOPS.



No. 37.

LOOP MADE TO TAKE ⅞ OR 1 IN. STRAP.

Full Finished, Oroide or Silver	$2 25	per pair.
" " Gold	2 75	"



No. 189. Latest Pattern.

TO TAKE ⅞ IN. STRAP.

Full Finished, Oroide or Silver	$2 30	per pair.
" " Gold	3 00	"

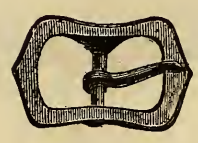
LANDAU TOP HOOKS.

No. 66.

Electro-Silver	$2 50	per pair.
Oroide	2 50	"
Gold	3 50	"

These Hooks are strong and well made, and having a long lip, draw the bows together when being hooked.

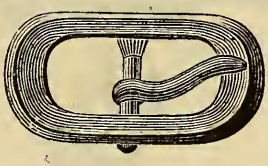
CENTER BAR BUCKLES.



No. 1. Crown Pattern.

	Silver	Oroide.	Gold.	Nickel.	Japanned.	
Size, ¾ in	$1 00	1 10	1 75	1 10	70	per dozen.
" ⅞	1 10	1 25	2 00	1 25	90	"
" 1	1 30	1 50	2 50	1 50	1 10	"

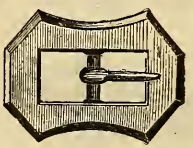
For Back Cross Straps.



No. 2. Oval Pattern.

	Silver.	Oroide.	Gold.	Nickel.	
Size, ¾ in	$2 00	2 00	2 50	2 10	per dozen.
" ⅞	2 25	2 25	2 75	2 20	"
" 1	2 35	2 35	3 00	2 60	"

For Back Cross Straps.



No. 3. Octagon Pattern.

	Silver.	Oroide.	Gold.	Nickel.	
Size, ¾ in	$2 00	2 00	2 50	2 10	per dozen.
" ⅞	2 25	2 25	2 75	2 20	"
" 1	2 35	2 35	3 00	2 60	"

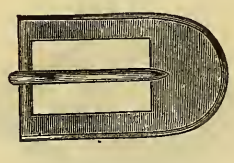
For Back Cross Straps.

CENTER BAR BUCKLES.

No. 4. Shield Pattern.

SOLID OROIDE.

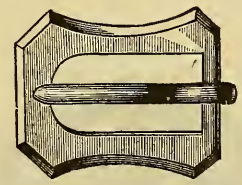
	Fine Finished.	Silver.	Gold.
¾ in.	$3 75	4 25	6 00 per dozen.
⅞	4 25	5 25	6 50 "
1	5 25	6 00	6 75 "
1⅛	6 00	6 50	7 50 "



No. 5. Half Round.

SOLID OROIDE.

	Fine Finished.	Silver.	Gold.
¾ in.	$4 25	5 25	6 25 per dozen.
⅞	5 25	5 75	6 75 "
1	6 00	6 25	7 50 "
1⅛	6 50	7 00	8 25 "



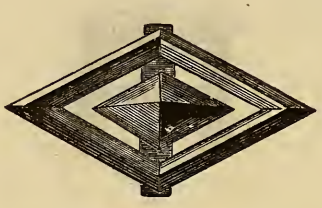
No. 6. Half Octagon.

SOLID OROIDE.

	Fine Finished.	Silver.	Gold.
¾ in.	$3 75	4 25	6 00 per dozen.
⅞	4 25	5 25	6 50 "
1	5 25	6 00	6 75 "
1⅛	6 00	6 50	7 50 "

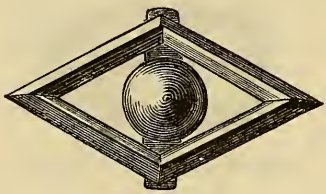
For Back Cross Straps.

CROSS STRAP CENTERS.



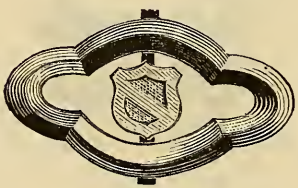
No. 1. Diamond Pattern.

	Silver.	Oroide.	Gold.	Nickel.
Size, 4¼ in.	$1 25	1 25	1 75	1 25 each.
" 4¾	1 50	1 50	2 10	1 50 "
" 5¼	2 00	2 00	2 50	2 00 "



No. 2. Diamond Pattern. Round Center.

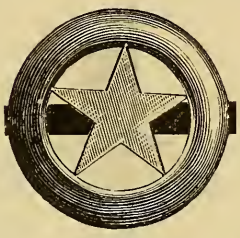
	Silver.	Oroide.	Gold.	Nickel.
Size, 4¼ in.	$1 25	1 25	1 75	1 25 each.
" 4¾	1 50	1 50	2 10	1 50 "
" 5¼	2 00	2 00	2 50	2 00 "



No. 3. Shield Pattern.

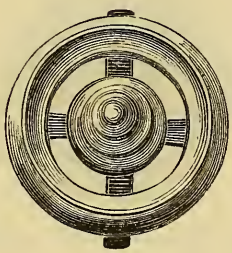
	Silver.	Oroide.	Gold.	Nickel.
Size, 4⅛ in.	$1 35	1 35	1 70	1 35 each.
" 4⅜	1 65	1 65	2 00	1 65 "
" 4⅝	2 00	2 00	2 50	2 00 "

CROSS STRAP CENTERS.



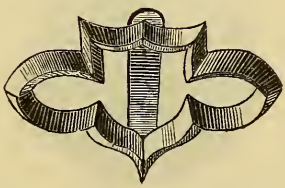
No. 4. Star Pattern.

	Silver.	Oroide.	Gold.	Nickel.
Size, 2⅜ in.	$1 00	1 00	1 25	1 00 each.
" 2⅝	1 25	1 25	1 45	1 25 "



No. 5. Round Pattern.

	Silver.	Oroide.	Gold.	Nickel.
Size, 2 in.	$1 15	1 15	1 30	1 15 each.
" 2¼	1 25	1 25	1 50	1 25 "
" 2½	1 45	1 45	1 75	1 45 "



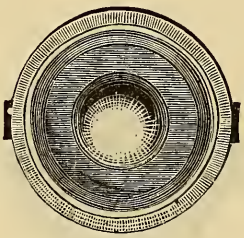
No. 6. Scroll Pattern.

	Silver.	Oroide.	Gold.	Nickel.
Size, 4⅛ in.	$1 30	1 30	1 75	1 30 each.
" 4⅜	1 50	1 50	2 00	1 50 "
" 4⅝	2 00	2 00	2 25	2 00 "

CROSS STRAP CENTERS.

No. 7. Button Pattern.

	Silver.	Oroide.	Gold.	Nickel.
Size, 2 in	$1 15	1 15	1 30	1 15 each.
" 2¼	1 25	1 25	1 50	1 25 "
" 2½	1 45	1 45	1 75	1 45 "



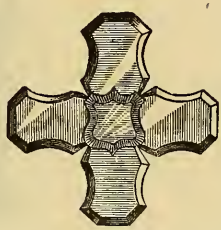
No. 8. Center Ball Pattern.

	Silver.	Oroide.	Gold.	Nickel.
Size, 2 5/16 in	$1 15	1 15	1 30	1 15 each.
" 2⅝	1 25	1 25	1 50	1 25 "
" 2⅞	1 45	1 45	1 75	1 45 "

No. 9. Plain Pattern.

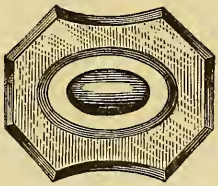
	Silver.	Oroide.	Gold.	Nickel.
Size, 2 5/16 in	$1 15	1 15	1 30	1 15 each.
" 2⅝	1 25	1 25	1 50	1 25 "
" 2⅞	1 45	1 45	1 75	1 45 "

CROSS STRAP CENTERS.



No. 10. Cross Pattern.

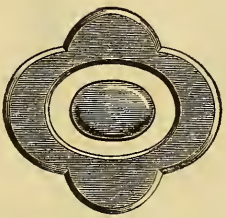
Fine Finished Oroide	$1 00 each.
Electro-Silver Plated	1 25 "
Gold Plated	1 50 "



No. 11. Octagon Pattern.

SOLID OROIDE.

	Fine Finished.	Electro-Silver.	Gold.
Large Size	$1 50	1 50	1 75 each.
Medium "	1 35	1 35	1 60 "
Small "	1 25	1 25	1 50 "

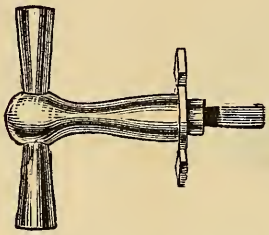


No. 12. Solid Oroide.

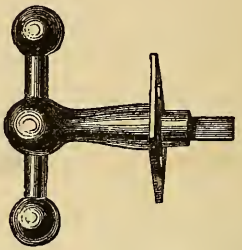
	Fine Finished.	Electro-Silver.	Gold.
3¾ in. Long	$1 50	1 50	1 75 each.

The above has bolts on the back, threaded and nutted ready to fasten on to cross straps.

CLUB HANDLES.



No. 1. Plain Handle.



No. 2. Ball Handle.

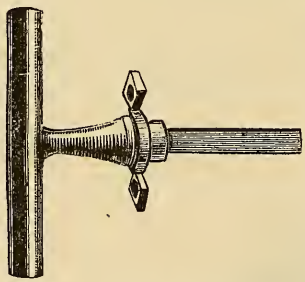
PRICE PER PAIR.

Lengths, in.	2½	2¾	3
Silver	$1 00	1 15	1 20
Oroide	1 10	1 20	1 30
Gold	1 50	1 75	2 00
Nickel	1 10	1 20	1 30
Japanned	70	75	90

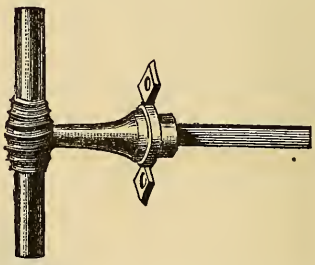
Lengths, in.	2¾	3⅛	3½
Silver	$1 50	1 75	2 25
Oroide	1 75	2 00	2 50
Gold	2 25	2 50	3 00
Nickel	1 75	2 00	2 50

Washers and Screws complete.

Packed in Boxes of 6 Pairs each.



No. 3. Straight Handle.



No. 4. Ribbed Center.

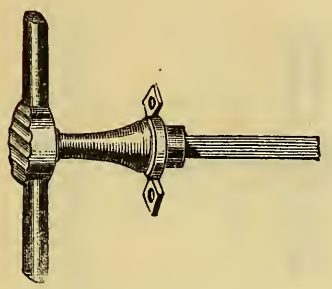
PRICE PER PAIR.

Lengths, in.,	3	3¼	3⅜	4 7/16
Silver	$2 75	3 25	3 75	4 25
Oroide	2 75	3 25	3 75	4 25
Gold	3 00	3 50	4 00	4 75
Nickel	2 75	3 25	3 75	4 25

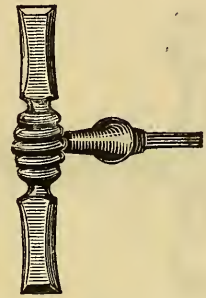
Lengths, in.,	3¼	3⅜	4 7/16	5
Silver	$3 00	3 50	4 25	4 50
Oroide	3 00	3 50	4 25	4 50
Gold	3 25	3 75	4 50	4 75
Nickel	3 00	3 50	4 25	4 50

Packed in Boxes of 6 Pairs each. Washers and Screws complete.

CLUB HANDLES.



No. 5. Flat, Oval Handle.



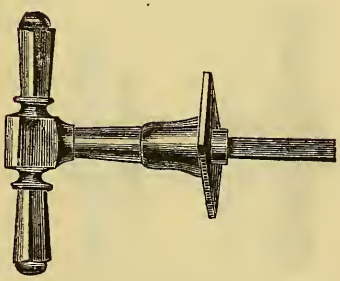
No. 6. Scroll Handle.

PRICE PER PAIR.

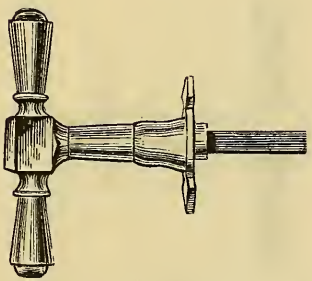
Lengths, in.,	3¼	3⅞	4 7/16	5
Silver	$2 75	3 50	4 00	4 50
Oroide	2 75	3 50	4 00	4 50
Gold	3 25	3 75	4 25	5 00
Nickel	2 75	3 50	4 00	4 50

Lengths, in.,	3¼	3⅞	4 7/16	5
Silver	$2 75	3 50	4 00	4 50
Oroide	2 75	3 50	4 00	4 50
Gold	3 25	3 75	4 25	5 00
Nickel	2 75	3 50	4 00	4 50

Packed in Boxes of 6 Pairs each. Washers and Screws complete.



No. 7. Octagon Handle.



No. 8. Round Handle.

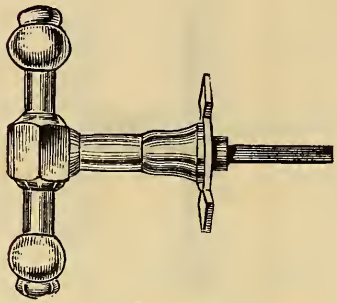
PRICE PER PAIR.

Lengths, in.,	3	3¼	3¾	4
Silver	$1 75	2 00	2 25	2 50
Oroide	1 75	2 00	2 25	2 50
Gold	2 25	2 50	3 00	3 50
Nickel	1 75	2 00	2 25	2 75

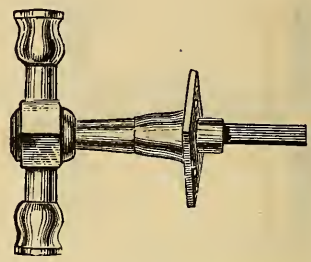
Lengths, in.,	3	3¼	3¾	4
Silver	$1 75	2 00	2 25	2 50
Oroide	1 75	2 00	2 25	2 50
Gold	2 25	2 50	3 00	3 50
Nickel	1 75	2 00	2 25	2 75

Packed in Boxes of 6 Pairs each. Washers and Screws complete.

CLUB HANDLES.



No. 9. Octagon Head.



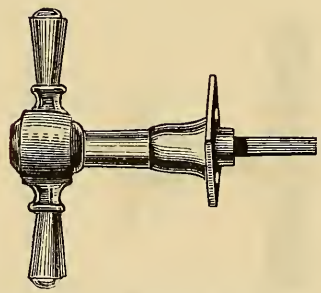
No. 10. Scroll Ends.

PRICE PER PAIR.

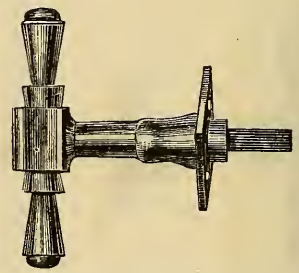
Lengths, in.	3¼	3¾	4
Silver	$1 75	2 00	2 25
Oroide	1 75	2 25	2 50
Gold	2 25	2 75	3 25
Nickel	1 75	2 25	2 50

Lengths, in.	3¼	3¾	4
Silver	$1 75	2 00	2 25
Oroide	1 75	2 25	2 50
Gold	2 25	2 75	3 25
Nickel	1 75	2 25	2 50

Packed in Boxes of 6 Pairs each. Washers and Screws complete.



No. 11. Flaring Handles.



No. 12. Flaring Handles.

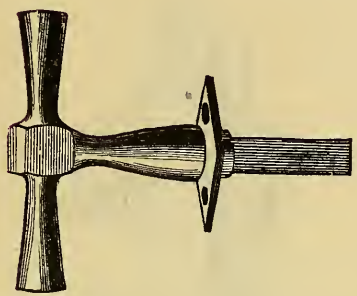
PRICE PER PAIR.

Lengths, in.	3¼	3¾	4
Silver	$1 75	2 00	2 25
Oroide	1 75	2 25	2 75
Gold	2 25	2 50	3 00
Nickel	1 75	2 25	2 75

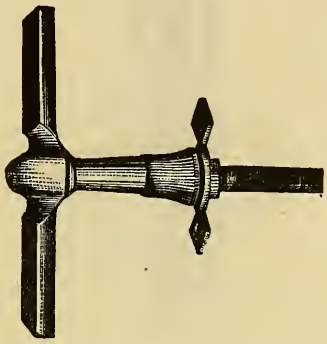
Lengths, in.	3¼	3¾	4
Silver	$1 75	2 00	2 25
Oroide	1 75	2 25	2 75
Gold	2 25	2 50	3 00
Nickel	1 75	2 25	2 75

Packed in Boxes of 6 Pairs each. Washers and Screws complete.

CLUB HANDLES.



No. 13. Plain Flaring.



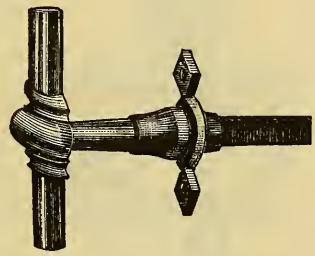
No. 14. Flat Front.

PRICE PER PAIR.

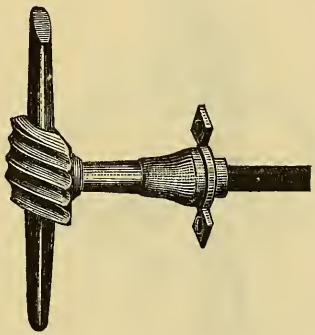
Lengths, in.,	2½	2¾	3	3½
Silver	$1 00	1 15	1 30	1 50
Oroide	1 15	1 25	1 40	1 75
Gold	1 75	2 00	2 25	2 50
Nickel	1 15	1 25	1 40	1 75

Lengths, in.,	3	3½	4	4⅜
Silver	$1 50	2 00	2 50	3 00
Oroide	1 75	2 25	2 50	3 25
Gold	2 25	2 75	3 00	3 50
Nickel	1 75	2 25	2 50	3 25

Packed in Boxes of 6 Pairs each. Washers and Screws complete.



No. 15. Oval Front.



No. 16. Tapering Handle.

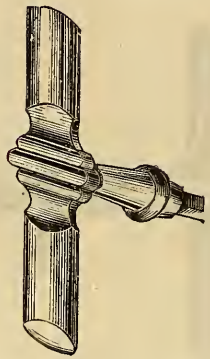
PRICE PER PAIR.

Lengths, in.	3¼	3¾	4¼
Silver	$2 75	3 25	3 75
Oroide	2 75	3 25	3 75
Gold	3 00	3 50	4 00
Nickel	2 75	3 25	3 75

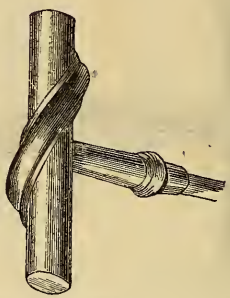
Lengths, in.	3¼	3¾	4¼
Silver	$2 75	3 25	3 75
Oroide	2 75	3 25	3 75
Gold	3 00	3 50	4 00
Nickel	2 75	3 25	3 75

Packed in Boxes of 6 Pairs each. Washers and Screws complete.

CLUB HANDLES.



No. 17. New Pattern.

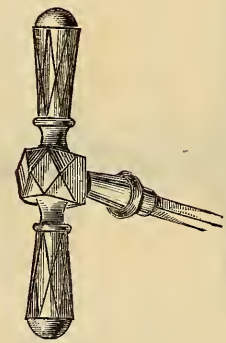


No. 18. New Pattern.

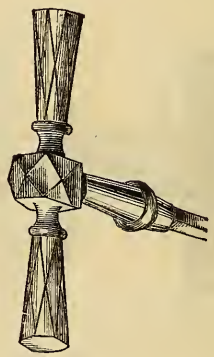
PRICE PER PAIR.

Solid Oroide, Fine Finished	$4 50	Solid Oroide	$3 00
Electro-Silver Plated	4 50	Electro-Silver Plated	3 25
Close " "	4 75	Close " "	3 50
Gold "	5 50	Gold "	4 25

Above are very chaste designs for private carriages.



No. 19. Fancy Pattern.



No. 20. Fancy Pattern.

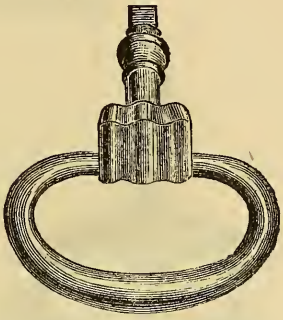
PRICE PER PAIR.

Solid Oroide, Fine Finished	$2 30	Solid Oroide, Fine Finished	$2 50
Electro-Silver Plated	2 30	Electro-Silver Plated	2 75
Gold Plated	3 25	Gold Plated	3 75

Above are very showy patterns and latest designs.

DROP HANDLES.

No. 1.
Oval, Plain Head.



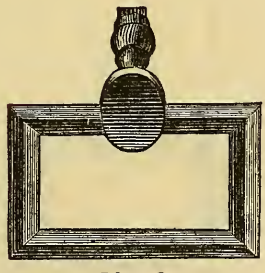
No. 2.
Oval, Fancy Head.

PRICE PER PAIR.

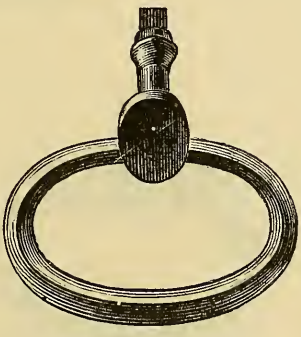
SIZES,	SMALL.	LARGE.
Electro-Silver	$2 50	$2 75
Oroide	2 75	3 25
Gold	4 00	4 50
Nickel	2 75	3 25
Close Plated Silver	4 00	4 50

SIZES,	SMALL.	LARGE.
Electro-Silver	$2 50	$2 75
Oroide	2 75	3 25
Gold	4 00	4 50
Nickel	2 75	3 25
Close Plated Silver	4 00	4 50

Packed with Screw or Plate Washers.



No. 3.
Square, Diamond Handle.



No. 4.
Oval, Diamond Handle.

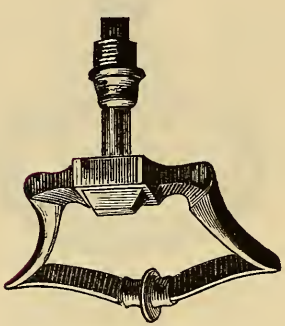
PRICE PER PAIR.

SIZES,	SMALL.	LARGE.
Electro-Silver	$2 75	$3 00
Oroide	3 00	3 50
Gold	4 00	4 50
Nickel	3 00	3 50
Close Plated Silver	4 00	4 50

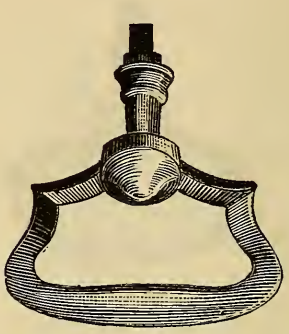
SIZES,	SMALL.	LARGE.
Electro-Silver	$2 75	$3 00
Oroide	3 00	3 50
Gold	4 00	4 50
Nickel	3 00	3 50
Close Plated Silver	4 00	4 50

Packed with Screw or Plate Washers.

DROP HANDLES.



No. 5. Scroll Handle.



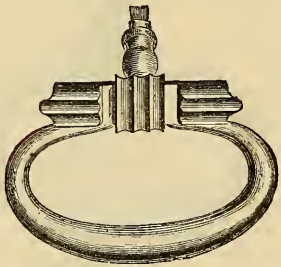
No. 6. Oval Scroll Handle.

PRICE PER PAIR.

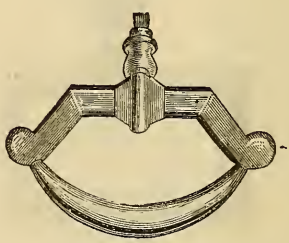
Oroide	$6 50
Gold	7 00
Nickel	6 50
Close Plated Silver	8 00

	SIZES,	SMALL.	LARGE.
Electro-Silver		$5 00	$5 25
Oroide		5 25	5 50
Gold		6 00	6 50
Nickel		5 25	5 50

Packed with Screw or Plate Washers.



No. 7. Oval.



No. 8. Half Oval.

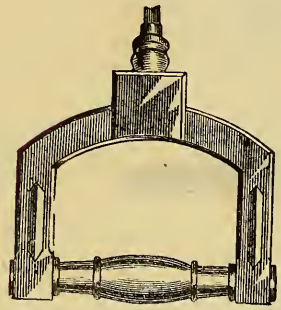
PRICE PER PAIR.

	SIZES,	SMALL.	LARGE.
Oroide		$5 25	$5 75
Electro-Silver		5 50	6 00
Gold		6 75	7 00

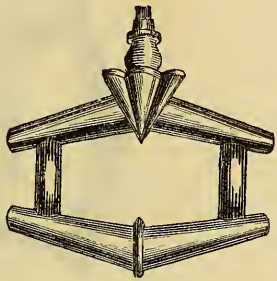
Oroide	$4 50
Electro-Silver	4 75
Close Plated Silver	5 25
Gold	6 00

Above are among the finest patterns now made.

DROP HANDLES.



No 9. Fancy.

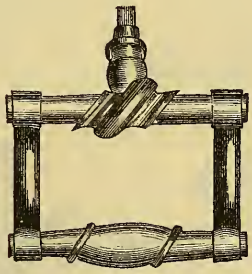


No. 10. Hexagon.

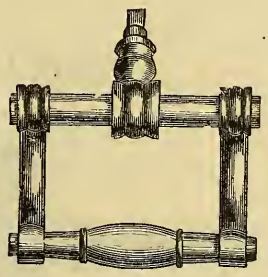
PRICE PER PAIR.

Oroide, Fine Finished	$7 50
Electro-Silver Plated	7 50
Gold Plated	9 50

	SIZES, LARGE.	SMALL.
Oroide	$5 50	$5 75
Electro-Silver	6 00	6 50
Close Silver Plated	6 50	7 50
Gold Plated	6 50	7 50



No. 11. Fancy Square.



No. 12. Fancy Square.

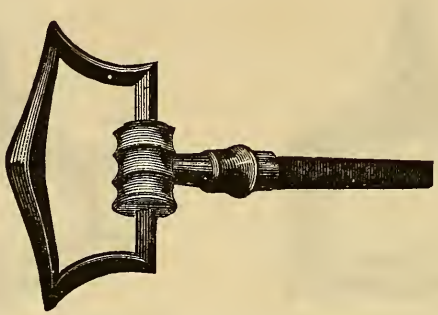
PRICE PER PAIR.

Oroide, Fine Finished	$7 25
Electro-Silver Plated	7 50
Gold Plated	8 50

Oroide, Fine Finished	$8 00
Electro-Silver Plated	8 50
Gold Plated	9 50

Above Handles are very elaborate designs, and finest yet offered to the trade.

DROP HANDLES.

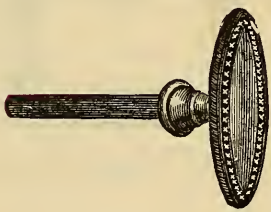


No. 13. Plain Scroll Handle.

Electro-Silver	Small Size,	$3 50	Large Size,	$3 75	per pair.
Oroide	"	3 75	"	4 00	"
Gold	"	4 75	"	5 00	"
Nickel	"	3 75	"	4 00	"

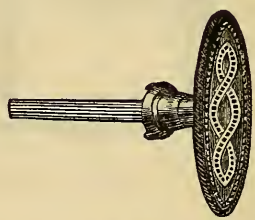
Packed with Screw or Plate Washers.

SHELL HANDLES.



PLAIN.

Silver Plated.



EMBOSSED.

Length	2¾	3	3¼	3½	Length	2¾	3	3¼	3½
Price	50	65	70	75 cents per pair.	Price	50	65	70	75 cents per pair.

Packed in Boxes of 6 Pairs each.

INSIDE HANDLES.

No. 200.

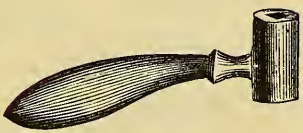
Electro-Silver.	Oroide.	Gold.	Nickel.
$6 00	6 00	7 50	6 50 per dozen.

No. 206.

Electro-Silver.	Oroide.	Gold.	Nickel.
$4 50	3 75	5 50	4 00 per dozen.

No. 207.

Electro-Silver.	Oroide.	Gold.	Nickel.
$4 00	3 25	5 50	3 75 per dozen.



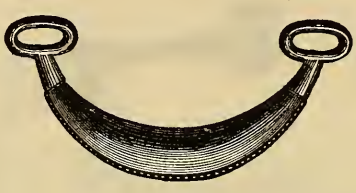
No. 212.

Electro-Silver.	Oroide.	Gold.	Nickel.
$5 25	4 25	6 00	5 00 per dozen.

No. 213.

Electro-Silver.	Oroide.	Gold.	Nickel.
$4 00	3 25	5 50	3 75 per dozen.

PULL-TO HANDLES.



Morocco Finish.

Full Silver	$2 25	per pair.
Oroide	2 25	"
Gold	2 75	"
Nickel	2 50	"

FOOT-BOARD HANDLES.

8 Inches Long.

Full Plated.

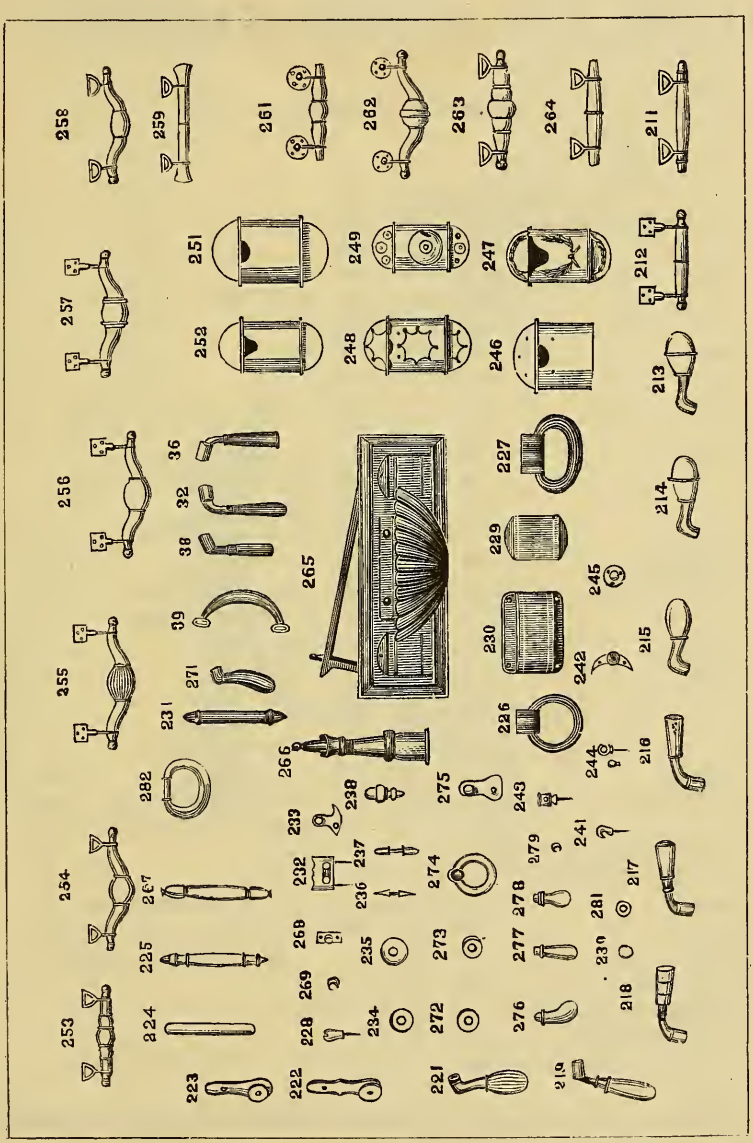
Silver Plated	$4 75	per pair.
Oroide Finish	4 75	"
Nickel Plated	5 00	"
Gold Plated	5 50	"

Three-quarter Plated.

Silver Plated	$4 25	per pair.
Oroide Finish	4 25	"
Nickel Plated	4 50	"
Gold Plated	5 00	"

TRIMMINGS.

IVORY, BLACK OR MOTTLED RUBBER, AND MOROCCO COVERED.



All of the finest quality and workmanship, and only first-class goods.

FINE

IVORY AND RUBBER TRIMMINGS.

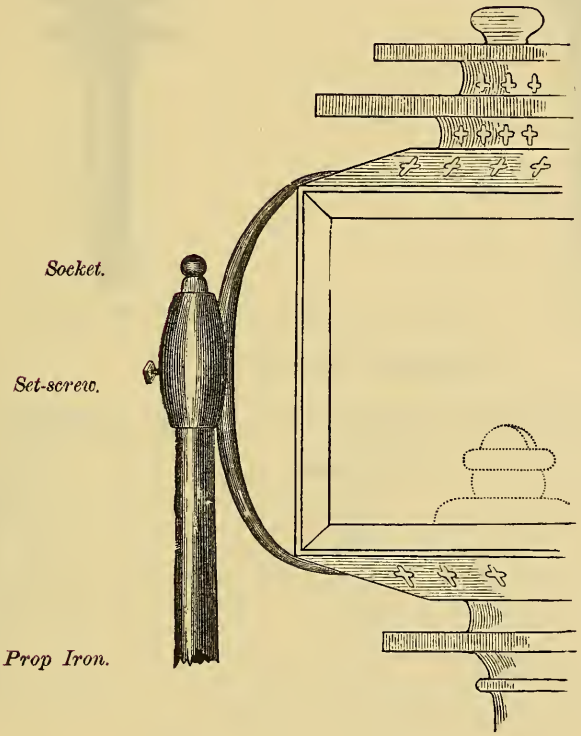
Illustrated on preceding page.

NOS.		SILVER.	GOLD.
253.	Sin. L'p Pull Handle	$3 50	$3 75
254.	" " "	4 75	5 25
255.	Hinge " "	5 25	5 75
256.	" " "	5 25	5 75
257.	" " "	5 25	5 75
258.	Single " "	4 25	4 75
259.	" " "	3 25	3 50
261.	Hinge " "	3 75	4 00
262.	" " "	5 25	5 75
263.	Single " "	3 50	3 75
264.	" " "	3 25	3 50
211.	" " "	3 75	4 00
212.	Hinge " "	3 75	4 25
282.	French Pull, "	3 25	3 50
213.	Belm'nt Inside "	3 75	4 00
214.	" " "	3 75	4 00
215.	" " "	3 50	3 75
216.	French " "	3 75	4 00
217.	" " "	3 37	3 62
218.	" " "	3 25	3 50
219.	" " "	3 50	3 75
221.	Belmont " "	3 75	4 00
222.	Flat Knob " "	2 75	3 00
223.	" " "	2 50	2 75
274.	Ring Bell Pulls	2 00	2 25
276.	Brewster's L'r Hd. T'p	2 25	2 35
277.	Woods' " "	2 25	2 35
278.	Motts' " "	2 25	2 35
245.	Window Slides ea.	50	60
242.	Half Moon " "	60	75
208.	Woolsey & Penfield's Lever Handles	5 00	5 00

NOS.		
224.	Slides doz.	$7 25
225.	" "	8 25
267.	" "	8 25
246.	Card Cases ea.	4 50
247.	" "	4 00
248.	" "	3 75
249.	" "	3 75
252.	" "	4 00
251.	" "	4 75
228.	Slotted Screw Knobs "	40
268.	Scr. Knobs and Br. Pl't's "	40
232.	Cord Block "	1 15
233.	Gl. Frame Fastenings "	75
275.	" " "	75
234.	Solid Cord Rings doz.	2 75
235.	Large Screw Eyelets "	4 50
272.	Long Tube " "	6 25
273.	Common " "	4 00
236.	Frogs "	3 00
237.	" "	3 00
238.	Bell Pull Knobs ea.	1 15
279.	Screw Knobs doz.	2 00
243.	Cord Runner Holders ea.	50
239.	Small Iv'y H'd Screws doz.	1 12
281.	Large " " "	1 75
241.	Cord Hooks ea.	35
244.	" End and Scr. Knob, "	62
266.	Rosew'd Mouth and Earpiece and Whistle per set,	1 25

The above prices are subject to variation according as the market changes in the price of ivory.

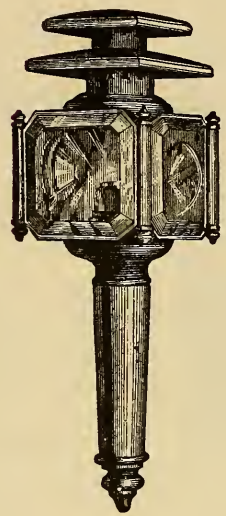
IMPROVED PATENT PROPS.



Weld to the Prop Iron. After the Lamp has been fitted to the Carriage, file the Prop Iron slightly flat, directly opposite the Set-screw in the Socket. Tighten the Screw, and the Lamp is held perfectly firm and secure.

PHŒNIX.

Round Metal Columns.



Chicago.

LAMPS.

COLUMN.

Solid Glass Columns.

Lincoln Park.

CHICAGO PHŒNIX.

OUTSIDE GOLD OR SILVER MOUNTED; CUT GLASS; METAL COLUMNS.

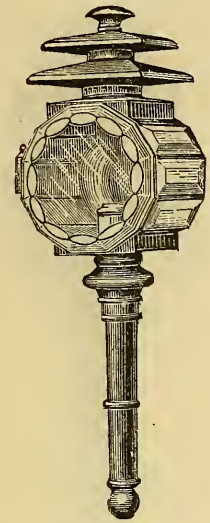
	SIZE OF GLASS.	EXTREME LENGTH.	PER PAIR.
No. 0.	3⅛ × 3⅛ in.	12 in.	$10 00
1.	3½ × 3½	13½	12 00
2.	3¾ × 3¾	14¼	13 50
3.	4¼ × 4¼	15¼	16 00
4.	5 × 5	19	20 00
5.	5½ × 5½	21	24 00
6.	5 × 6	23	28 00
With full Gold or Silver Stems			extra, 2 00
Patent Props			" 1 50

LINCOLN PARK COLUMN.

GOLD OR SILVER MOUNTED; GOLD LINED; CUT GLASS; PLAIN COLUMNS, WITH PATENT PROPS; FANCY BALLS ON LOWER HEADS.

	SIZE OF GLASS.	EXTREME LENGTH.	PER PAIR.
No. 4.	5¾ in.	17½ in.	$22 00
5.	6	19¾	25 00
6.	6	21¾	28 00
7	6¾	24	31 00
With full Gold or Silver Stems			extra, 2 00

CAPITOL.



Springfield.

LAMPS.

ORIENTAL.

South Park.

SPRINGFIELD CAPITOL.

OUTSIDE BLACK. GOLD LINED.

	SIZE OF FRONT GLASS.	EXTREME LENGTH.	PER PAIR.
No. 0.	3¼ in. diameter	12 in.	$7 00
1.	3⅝ "	12¾ "	9 00
2.	4⅛ "	13¾ "	10 50
3.	4⅝ "	15¼ "	13 50
4.	5 "	19 "	16 00
5.	5½ "	20¼ "	18 00
6.	6⅛ "	22¼ "	22 00
7.	6⅝ "	24 "	25 00
Rich Cut Glass			extra, 1 00

SOUTH PARK ORIENTAL.

OUTSIDE BLACK; GOLD LINED; CUT GLASS.

	SIZE OF GLASS.	EXTREME LENGTH.	PER PAIR.
No. 0.	3¾ in. diameter	13 in.	$9 50
1.	4⅛ "	13¾ "	12 00
2.	4⅝ "	15¼ "	14 00
3.	5 "	19 "	16 00
4.	5½ "	20¼ "	18 00
5.	6 "	22 "	21 00
6.	6⅝ "	24 "	25 00
Both styles with Gold or Silver Mountings			extra, 1 50
" " "		Stems	" 1 50
Patent Props			" 1 50

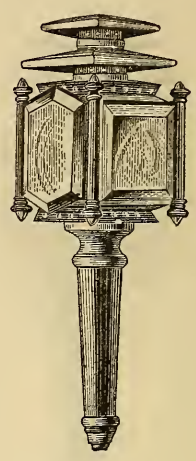
Patent Props do not come on Lamps of a smaller size than No. 4.

COTTAGE.

Jefferson Park.

LAMPS.

GOTHIC.



Riverside.

JEFFERSON PARK COTTAGE.

OUTSIDE BLACK; GOLD LINED; CUT GLASS.

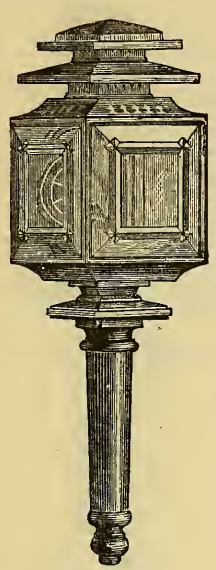
SIZE OF GLASS.	EXTREME LENGTH.	PER PAIR.
No. 00. 3⅛ in. diameter	10¾ in.	$7 00
0. 3⅝ "	12¾	9 00
1. 4⅛ "	13¾	11 00
2. 4⅝ "	15¼	13 50
3. 5 "	19	16 50
4. 5½ "	20¼	19 00
5. 6 "	22	22 00
6. 6⅝ "	24	25 00
With Gold or Silver Mountings		extra, 1 50
With full Gold or Silver Stems		" 1 50
Patent Props		" 1 50

Patent Props do not come on Lamps of a smaller size than No. 4.

RIVERSIDE GOTHIC.

SIZE OF BODY.	EXTREME LENGTH.	PER PAIR.
No. 0. 3½ × 3 in.	13 in.	$10 75
1. 3¾ × 3¼	13½	13 00
2. 4 × 3½	14	16 50
3. 4¾ × 3¾	14½	18 50
4. 4¾ × 4¼	15½	20 50
With Gold or Silver Mountings		extra, 1 50
" " " Stems		" 1 50

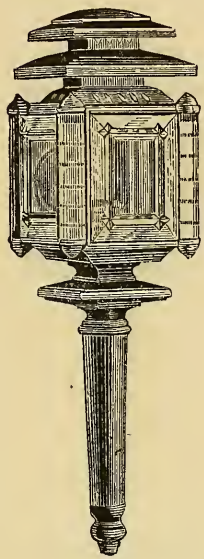
SQUARE MONITOR.



Union Park.

LAMPS.

BISMARCK.



Prince.

UNION PARK SQUARE MONITOR.

OUTSIDE BLACK; GOLD LINED; CUT GLASS.

	SIZE OF GLASS.	EXTREME LENGTH.	PER PAIR.
No. 00.	3 × 3 in.	11¼ in.	$6 50
0.	3¼ × 3¼	12	7 50
1.	3½ × 3½	12¾	9 00
2.	3¾ × 3¾	13¼	10 50
3.	4 × 4	15	12 50
3½.	4¼ × 4¼	17½	15 00
4.	4¾ × 4¾	18½	18 00
5.	5¼ × 5¼	22	21 00
6.	5¾ × 5¾	24	25 00
Patent Props.			extra, 1 50

PRINCE BISMARCK.

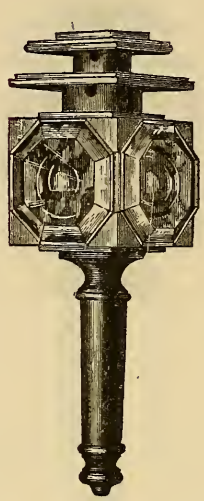
GOLD LINED; CUT GLASS; ROUND FROSTED; GLASS COLUMNS, WITH PATENT PROPS.

	SIZE OF FRONT GLASS.	EXTREME LENGTH.	PER PAIR.
No. 2.	4 × 2⅞ in.	16¾ in.	$18 00
3.	4⅜ × 3⅜	19	23 00
4.	4⅞ × 3¾	20	27 00
5.	5⅜ × 4	21	31 00
With Gold or Silver Mountings			extra, 1 50
" "	Stems		" 1 50

Patent Props do not come on Lamps of a smaller size than No. 4.

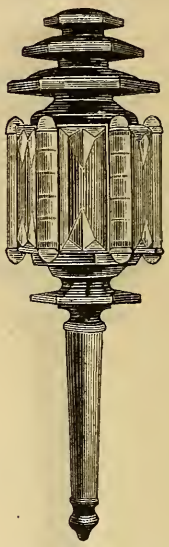
LAMPS.

VICTORY.



Douglass Park.

WILLIAM.



Germania.

DOUGLASS PARK VICTORY.

OUTSIDE GOLD OR SILVER MOUNTED; GOLD OR SILVER METAL CORNERS.

	SIZE OF GLASS.	EXTREME LENGTH.	PER PAIR.	GOLD OR SILVER STEMS.
No. 1.	3½ in. diameter	13½ in.	$12 00	$0 50 extra.
2.	4 "	14¼	14 50	50 "
3.	4½ "	16¾	18 00	50 "
4.	5 "	18¾	22 00	1 00 "
5.	5½ "	22½	25 00	1 00 "
6.	6 "	23¾	28 00	1 00 "
7.	6½ "	24¾	32 00	1 50 "

GERMANIA, WILLIAM.

GOLD LINED, EXTRA CUT GLASS; ROUND FROSTED GLASS COLUMNS, WITH PATENT PROPS.

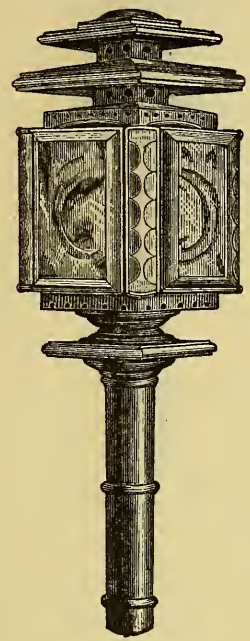
	LENGTH OF BODY.	EXTREME LENGTH.	PER PAIR.
No. 2.	5¼ in.	16½ in.	$20 00
3.	5½	19	24 00
4.	5¾	21½	28 00
5.	6	24	32 00
6.	6	26	37 00

GOLD OR SILVER MOUNTED, WITH FULL GOLD OR SILVER STEMS.

Nos. 2, 3 and 4 ..... $1 50 extra per pair.
5 and 6 ..... 2 00 " "

LAMPS.

SQUARE PILLAR.



Dexter Park.

COLUMBIA.

Humboldt Park.

DEXTER PARK SQUARE PILLAR.

GOLD OR SILVER MOUNTED; GOLD LINED; CUT GLASS.

	SIZE OF BODY.	EXTREME LENGTH.	PER PAIR.	GOLD OR SILVER STEMS.
No. 1.	3½ × 3¼ in.	12½ in.	$11 00	$1 00 extra.
2.	4 × 3¾	13½	13 00	1 50 "
3.	4½ × 4¼	15½	16 00	1 50 "
4.	5 × 4¾	17½	19 00	2 00 "
5.	5½ × 5¼	19¾	22 00	2 00 "
6.	6 × 5¾	21¾	25 00	
7.	6¾ × 6	24	28 00	
Patent Props			per pair,	1 50 "

Patent Props do not come on Lamps of a smaller size than No. 4.

HUMBOLDT PARK COLUMBIA.

OUTSIDE SILVER; SILVER LINED; CUT GLASS AND ORNAMENTS.

	SIZE OF GLASS.	EXTREME LENGTH.	PER PAIR.	GOLD LINED.
No. 2.	4½ × 3¾ in.	18¾ in.	$13 00	$1 00 extra.
3.	4¾ × 4	21¾	16 50	1 00 "
4.	5½ × 4½	24¼	20 00	1 00 "
5.	5¾ × 4¾	25¾	24 00	1 25 "
6.	6¼ × 5	28¼	27 00	1 25 "
7.	6½ × 5½	28¾	31 00	1 50 "
8.	6¾ × 5¾	31	35 00	1 50 "

Notched Glass.

BRAZILIAN LAMPS.

Plain Glass.

Central Park. *Lake Park.*

CENTRAL PARK BRAZILIAN.

OUTSIDE SILVER; SILVER LINED; NOTCHED GLASS AND ORNAMENTS; STAINED REFLECTORS.

	SIZE OF GLASS.	EXTREME LENGTH.	PER PAIR.
No. 0.	3¾ × 1¾ in.	13 in.	$6 00
1.	4½ × 2⅛	16	7 50
2.	5 × 2⅜	19¼	9 50
3.	5½ × 2½	20	12 00
3½.	5⅝ × 2¾	22¼	14 00
4.	5¾ × 2⅞	24¼	16 00
5.	6¼ × 3¼	28	19 00
6.	6¾ × 3½	28½	23 00

LAKE PARK BRAZILIAN.

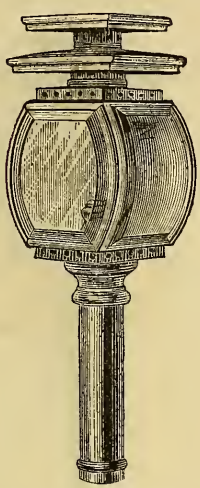
OUTSIDE SILVER; SILVER LINED; PLAIN CUT GLASS; STAINED REFLECTORS.

Same Nos., sizes, lengths and prices of above list.

GOLD LINED; HEADS LINED WITH SILVER.

Nos. 0, 1 and 2	$1 00 extra per pair.
3, 3½ " 4	1 50 " "
5 " 6	2 00 " "

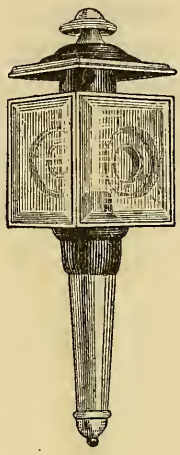
MAGENTA.



Garden City.

LAMPS.

NEWPORT.



Favorite.

GARDEN CITY MAGENTA.

PLAIN BLACK OUTSIDE.

	SIZE OF GLASS.	EXTREME LENGTH.	PER PAIR.
No. 0.	3⅝ × 3½ in.	10½ in.	$8 50
1.	3⅞ × 3¾	12½	10 50
2.	4⅛ × 4	14	13 00
3.	4⅜ × 4¼	15½	15 00

GOLD OR SILVER MOUNTED, WITH FULL GOLD OR SILVER STEMS.

No. 0.	$9 00	per pair.
1.	11 00	"
2.	14 75	"
3.	16 00	"
Patent Props	extra 1 50	"

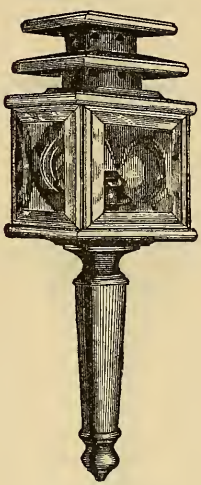
Larger Sizes to 6½ in. Glass.

FAVORITE NEWPORT.

	SIZE OF GLASS.	EXTREME LENGTH.	PER PAIR.
No. 00.	2⅞ × 3⅛ in.	12½ in.	$4 50
0.	3⅛ × 3⅜	12¾	5 50
1.	3⅜ × 3⅝	13¼	6 00
2.	3⅝ × 3⅞	13½	7 50

Either Gold or Silver Mounted, or full Gold or Silver Stems. Very appropriate for a cheap good Phaeton Lamp.

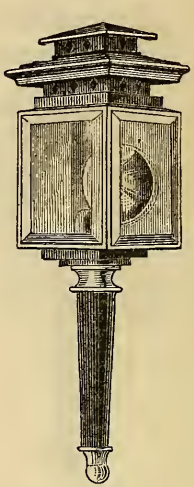
EMPIRE.



Russian.

LAMPS.

ENGLISH.



Queen Victoria.

RUSSIAN EMPIRE.

OUTSIDE GOLD OR SILVER; DIAMOND MOULDING AROUND BODY; CUT GLASS; STAINED REFLECTORS.

	LENGTH OF BODY.	EXTREME LENGTH.	PER PAIR.
No. 1.	4¼ in.	13 in.	$11 50
2.	4¾	14	12 50
3.	5¼	16¾	16 00
4.	5¾	18¾	21 00
5.	6½	22½	25 00
6.	7	24½	29 00
With full Gold or Silver Stems			extra, 1 50
Patent Props			" 1 50

QUEEN VICTORIA, ENGLISH.

	SIZE OF GLASS.	EXTREME LENGTH.	PER PAIR.
No. 0.	4 × 3½ in.	12 in.	$8 00
1.	4¼ × 3¾	13½	10 00
2.	4½ × 4	15	12 00
3.	4¾ × 4¼	16½	14 00
4.	5 × 4½	18	16 00

GOLD OR SILVER MOUNTED; FULL GOLD OR SILVER STEMS.

Nos. 0, 1 and 2 ..... $1 00 extra per pair.
3 " 4 ..... 1 50 " "

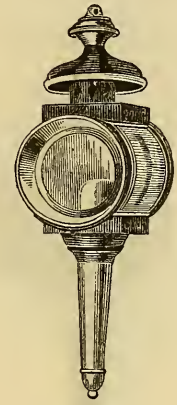
English Hooks and Thumb Nuts on all sizes.

SQUARE PARK.

Dearborn.

LAMPS.

PHAETON.



Apollo.

DEARBORN SQUARE PARK.

OUTSIDE BLACK; GOLD LINED; CUT GLASS.

	SIZE OF GLASS.	EXTREME LENGTH.	PER PAIR.
No. 0.	3 × 3¼ in.	11½ in.	$8 00
1.	3¼ × 3½	12	9 50
2.	3⅜ × 3⅞	13	11 50
3.	3⅝ × 4⅛	14	12 50
Gold or Silver Mountings and Stems, all sizes			extra, 50

APOLLO PHAETON.

BENT GLASS SIDES; FLANGED FRONTS.

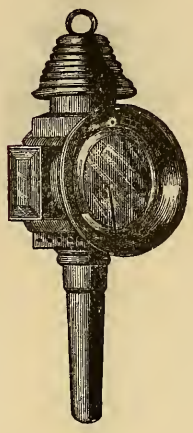
	SIZE OF FRONT.	EXTREME LENGTH.	PER PAIR.
No. 00.	3⅛ in. diameter.	12 in.	$6 00
0.	3¾ "	12¾	8 00
1.	4 "	13½	10 00
2.	4½ "	15	12 00
3.	5 "	16½	15 00
4.	5½ "	18¼	18 00

FULL GOLD OR SILVER STEMS.

Nos. 00, 0 and 1	$0 50	extra per pair.
2 " 3	1 00	" "
4	1 25	" "
Patent Props	1 50	" "

Patent Props do not come on Lamps of a smaller size than No. 4.

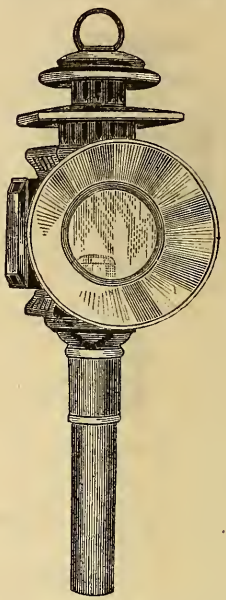
ENGLISH DOG CART.



Bloodhound.

LAMPS.

ENGLISH MAIL.



Dundreary.

BLOODHOUND, FOR ENGLISH DOG CART.

OUTSIDE BLACK; SILVER LINED; CUT GLASS.

	SIZE OF GLASS.	EXTREME LENGTH.	PER PAIR.	GOLD LINED.
No. 0.	4 in. diameter	14 in.	$10 50	$0 50 extra.
1.	4½ "	15	12 50	50 "
2.	4¾ "	15½	14 50	75 "
3.	5 "	16½	17 00	75 "
4.	5¼ "	17½	19 50	1 00 "
5.	5½ "	18¾	22 00	1 00 "

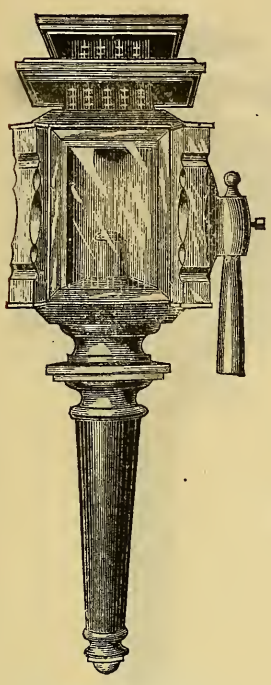
DUNDREARY'S ENGLISH MAIL.

GOLD OR SILVER MOUNTED, WITH FULL GOLD OR SILVER STEMS; GOLD OR SILVER LINED; GOLD OR SILVER FLANGES; CUT GLASS.

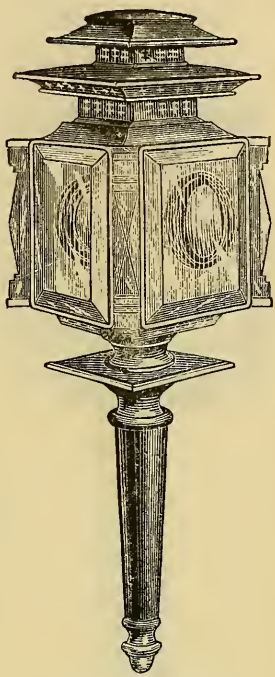
	DIAMETER OF FLANGE.	EXTREME LENGTH.	PER PAIR.
No. 1.	5¼ in. Outside	15 in.	$15 00
2.	5⅜ "	16	18 00
3.	5½ "	17	21 50
4.	5⅝ "	18	25 50

Sizes 1 and 2 have Hooks and Thumb Nuts. Sizes 3 and 4 have Patent Props.

Burn Sperm Candles. Can be made for Oil.



LAMPS.



WHITE MANFG. CO'S.

Patent Column. *Pillar Coach.*

PATENT COLUMN.

SILVER MOULDINGS, SILVER LINED OR GOLD CENTERS.

	SIZE OF BODY.	EXTREME LENGTH.	SUITABLE FOR	PER PAIR.
No 1.	5¾ × 6 in.	23 in.	Large Clarence	$38 00
2.	5½ × 5¾	22	Landau or Coach	36 00
3.	5 × 5⅜	21	Brette or Caleche	34 00
4.	5 × 5⅛	20	Landaulette	32 00
5.	4½ × 4¾	19	6-Seat Rockaway	30 00

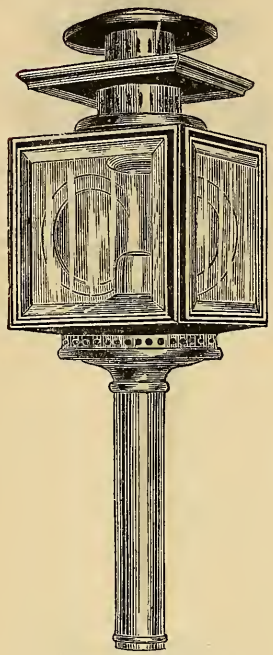
Gold Mouldings, Silver Lined or Gold Centers, add $1 00 extra per pair; Silver Stems, $1 50 extra per pair; Gold Stems, $2 00 extra per pair.

PILLAR COACH LAMP.

SILVER MOULDINGS, SILVER LINED OR GOLD CENTERS.

	SIZE OF BODY.	EXTREME LENGTH.	SUITABLE FOR	PER PAIR.
No. 1.	5¾ × 6 in.	23 in.	Large Clarence	$38 00
2.	5½ × 5¾	22	Landau or Coach	36 00
3.	5 × 5⅜	21	Brette or Caleche	34 00

Gold Mouldings, Silver Lined or Gold Centers, add $1 00 extra per pair; Silver Stems, $1 50 extra per pair; Gold Stems, $2 00 extra per pair.



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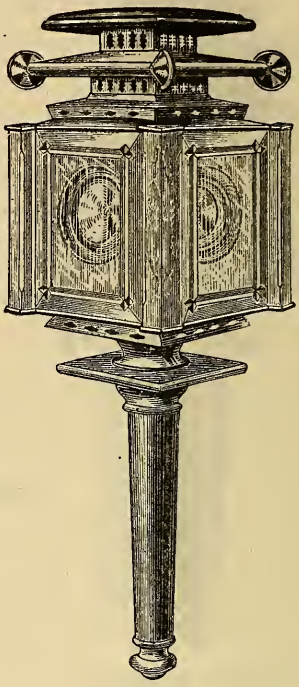


WHITE MANFG. CO'S.

Cornice Square. *Pedestal.*

CORNICE SQUARE.

SILVER MOULDINGS, SILVER LINED OR GOLD CENTERS.

	SIZE OF BODY.	EXTREME LENGTH.	SUITABLE FOR	PER PAIR.
No. 1.	5½ in.	21 in.	Large Clarence	$29 00
2.	5¼	20	Landau or Coach	27 00
3.	5	19	Brette or Caleche	25 00
4.	4¾	18	Large Coupe	23 00

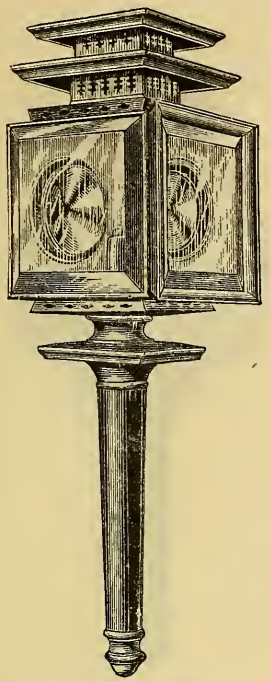
Gold Mouldings, Silver Lined or Gold Centers, add $1 00 extra per pair; Silver Stems, $1 50 extra per pair; Gold Stems, $2 00 extra per pair.

PEDESTAL.

SILVER MOULDINGS, SILVER LINED OR GOLD CENTERS.

	SIZE OF BODY.	EXTREME LENGTH.	SUITABLE FOR	PER PAIR.
No. 1.	5¾ × 6 in.	23 in.	Large Clarence	$39 00
2.	5½ × 5¾	22	Landau or Coach	37 00
3.	5¼ × 5½	21	Brette or Caleche	35 00

Gold Mouldings, Silver Lined or Gold Centers, add $1 00 extra per pair; Silver Stems, $1 50 extra per pair; Gold Stems, $2 00 extra per pair.



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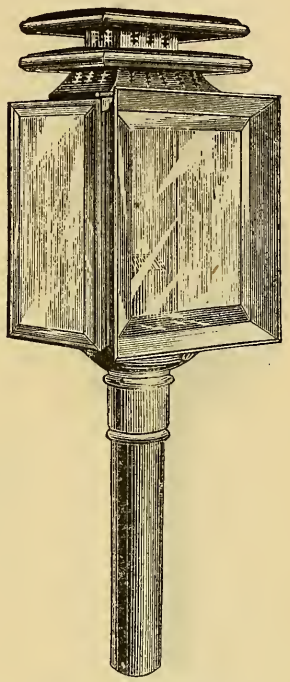


WHITE MANFG. CO'S.

Columbian Square. *Pourtales Square.*

COLUMBIAN SQUARE.

SILVER MOULDINGS, SILVER LINED OR GOLD CENTERS.

	SIZE OF BODY.	EXTREME LENGTH.	SUITABLE FOR	PER PAIR.
No. 1.	5½ × 6¼ in.	22 in.	Large Clarence	$27 00
2.	5¼ × 6	21	Landau or Coach	25 00
3.	5 × 5¾	20	Brette or Caleche	23 00
4.	4½ × 5¼	18	Large Coupe	21 00
5.	4⅛ × 5⅝	16½	6-Seat Rockaway or Landaulette	19 00
6.	4 × 4⅜	15	4-Seat Phaeton	16 00
7.	3½ × 3¾	13	" Rockaway	12 00
8.	3¼ × 3½	11	" Buggy	10 50
9.	3 × 3¼	10	" Buggy	10 00

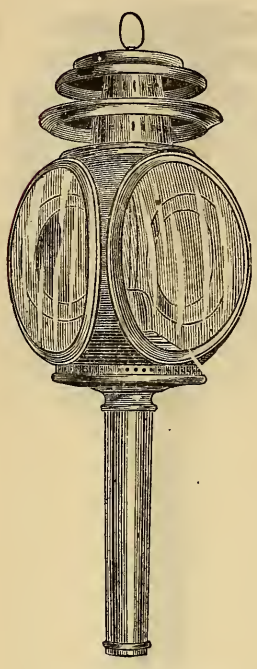
Gold Mouldings, Silver Lined or Gold Centers, add $1 00 extra per pair; Silver Stems, $1 50 extra per pair; Gold Stems, $2 00 extra per pair.

POURTALES SQUARE.

SILVER MOULDINGS, SILVER LINED.

	SIZE OF BODY.	EXTREME LENGTH.	SUITABLE FOR	PER PAIR.
No. 3.	5 × 5¾ in.	18 in.	Caleche	$29 00
4.	4¾ × 5½	16½	Large Coupe	27 00
5.	4½ × 5¼	15	Landaulette	25 00

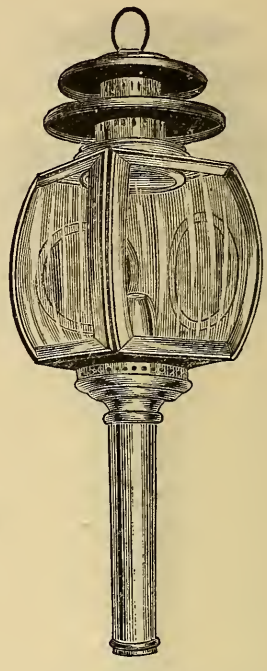
Gold Mouldings, Silver Lined, add $2 00 extra per pair; Silver Stems, $1 50 extra per pair; Gold Stems, $2 00 extra per pair.



Yelger.

LAMPS.

WHITE MANFG. CO'S.



Anglaise.

YELGER.

SILVER MOULDINGS, SILVER LINED.

	SIZE OF BODY.	EXTREME LENGTH.	SUITABLE FOR	PER PAIR.
No. 1.	5¾ × 6¾ in.	22 in.	Large Clarence	$38 00
2.	5½ × 6½	21	Landau or Coach	36 00
3.	5¼ × 6¼	20	Brette or Caleche	34 00

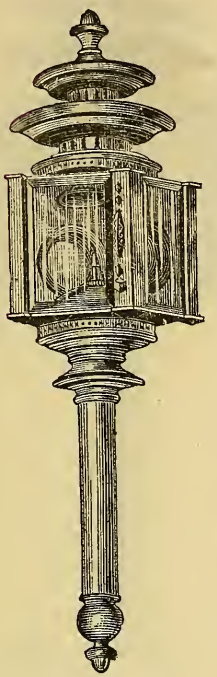
Gold Mouldings, Silver Lined, add $2 00 extra per pair; Silver Stems, $1 50 extra per pair; Gold Stems, $2 00 extra per pair.

ANGLAISE.

SILVER MOULDINGS, SILVER LINED.

	SIZE OF BODY.	EXTREME LENGTH.	SUITABLE FOR	PER PAIR.
No. 1.	6¼ × 6½ in.	22 in.	Large Clarence	$33 00
2.	6 × 6½	21	Landau or Coach	31 00
3.	5½ × 6	20	Brette or Caleche	29 00
4.	5 × 5½	19	Coupe	27 00
5.	4¾ × 5¼	17	Landaulette	24 00
6.	4¼ × 4¾	15	6-Seat Rockaway	20 00
7.	3¾ × 4¼	13	4-Seat Phaeton	16 00
8.	3½ × 4	11	Pony "	14 00

Gold Mouldings, Silver Lined, add $1 00 extra per pair; Silver Stems, $1 50 extra per pair; Gold Stems, $2 00 extra per pair.



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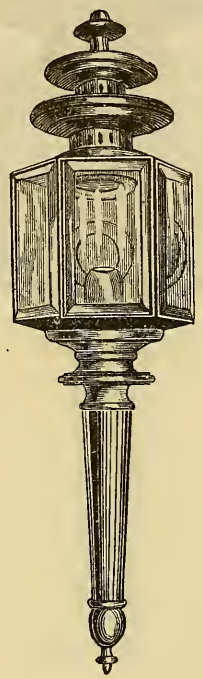


Pentagon. *Hexagon.*

WHITE MANFG. CO'S.

PENTAGON PEDESTAL.

ALL SILVER OUTSIDE, SILVER LINED OR GOLD CENTERS.

	SIZE OF BODY.	EXTREME LENGTH.	PER PAIR.
No. 1.	5¾ in.	28 in.	$70 00
2.	5½	26	67 00

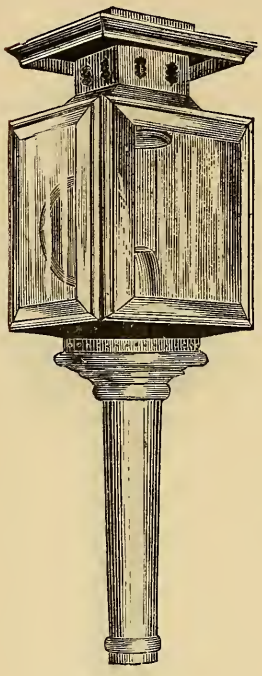
All Gold Outside, Silver Lined or Gold Centers, add $10 00 extra per pair.

HEXAGON COACH.

SILVER MOULDINGS, HEADS AND STEMS, SILVER LINED.

	SIZE OF BODY.	EXTREME LENGTH.	PER PAIR.
No. 1.	6¼ × 6¼ in.	28 in.	$33 00
2.	6 × 6	27	31 00
3.	5¾ × 5¾	26	29 00
4.	5½ × 5½	25	27 00
5.	5¼ × 5¼	24	25 00

Gold Mouldings, Heads and Stems, Silver Lined, add $10 00 extra per pair.



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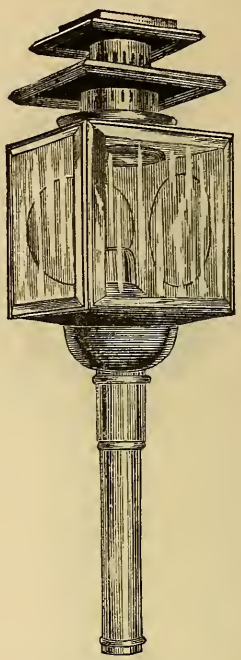


WHITE MANFG. CO'S.

Oblong Square. *English Square.*

OBLONG SQUARE.

SILVER MOULDINGS, SILVER LINED OR GOLD CENTERS.

	SIZE OF BODY.	EXTREME LENGTH.	SUITABLE FOR	PER PAIR.
No. 5	4¾ × 5¼ in.	17 in.	Phaeton or 6-Seat Rockaway	$20 00
6.	4½ × 5	15	Rockaway or Small Phaeton	16 50
7	4 × 4½	13	" " " Drag	14 00
8.	3½ × 4	12	Buggy	10 50
9.	3 × 3½	11	"	10 00
10.	2¾ × 3⅛	10	Pony Phaeton	9 00

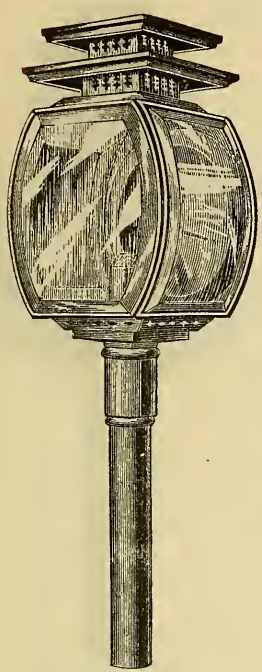
Gold Mouldings, Silver Lined or Gold Centers, add $1 00 extra per pair; Silver Stems, $1 50 extra per pair; Gold Stems, $2 00 extra per pair.

ENGLISH SQUARE.

SILVER MOULDINGS, SILVER LINED ONLY.

	SIZE OF BODY.	EXTREME LENGTH.	SUITABLE FOR	PER PAIR.
No. 0.	6 × 6⅝ in.	23½ in.	5-Glass Landau	$33 00
1.	5¾ × 6¼	22½	Large Clarence	31 00
2.	5½ × 6	21½	Landau or Coach	29 00
3.	5¼ × 5¾	20	Brette or Caleche	27 00
4.	5 × 5½	18	Large Coupe	25 00
5.	5¾ × 5¼	17	Landaulette	22 00

Gold Mouldings, Silver Lined only, add $1 00 extra per pair; Silver Stems, $1 50 extra per pair; Gold Stems, $2 00 extra per pair.



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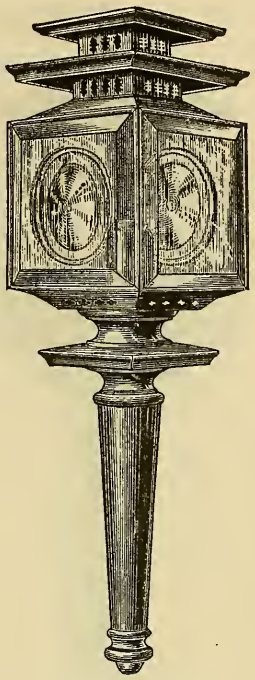


Brilliant. *Square Flange.*

WHITE MANFG. CO'S.

BRILLIANT.

SILVER MOULDINGS, SILVER LINED.

	SIZE OF BODY.	EXTREME LENGTH.	SUITABLE FOR	PER PAIR.
No. 1.	6½ × 5½ in.	22 in.	Large Clarence	$30 00
2.	6¼ × 5¼	21	Landau or Coach	28 00
3.	6 × 5	20	Brette or Caleche	26 00
4.	5¾ × 4¾	19	Large Coupe	24 00

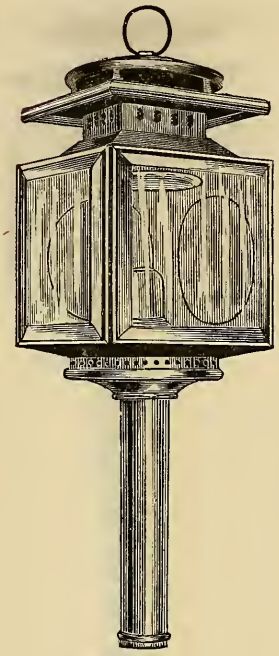
Gold Mouldings, Silver Lined, add $1 00 extra per pair; Silver Stems, $1 50 extra per pair; Gold Stems, $2 00 extra per pair.

SQUARE FLANGE.

SILVER MOULDINGS, SILVER LINED OR GOLD CENTERS.

	SIZE OF BODY.	EXTREME LENGTH.	SUITABLE FOR	PER PAIR.
No. 1.	5½ in.	21 in.	Large Clarence	$29 00
2.	5¼	20	Landau or Coach	27 00
3.	5	19	Brette or Caleche	25 00
4.	4¾	18	Large Coupe	23 00

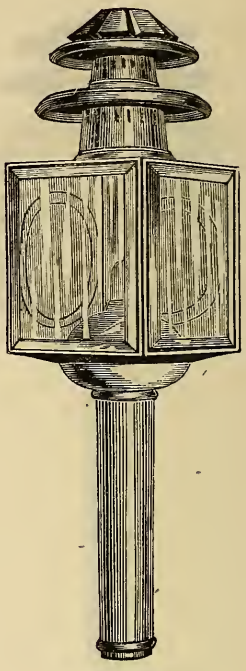
Gold Mouldings, Silver Lined or Gold Centers, add $1 00 extra per pair; Silver Stems, $1 50 extra per pair; Gold Stems, $2 00 extra per pair.



Wood's.

LAMPS.

WHITE MANFG. CO'S.



California.

WOOD'S SQUARE.

SILVER MOULDINGS, SILVER LINED.

	SIZE OF BODY.	EXTREME LENGTH.	SUITABLE FOR	PER PAIR.
No. 0.	5¾ in. square	22 in.	Clarence	$31 00
1.	5½ "	21	"	29 00
2.	5¼ "	19½	5-Glass Landau	27 00
3.	5 "	18	Victoria	25 00
4.	4¾ "	16	Coupe	22 00
5.	4½ "	15	Landaulette	20 00
6.	4⅛ × 4⅜ in.	14½	T. Cart	18 00
7.	3½ × 3⅞	13	Wagonette	16 00

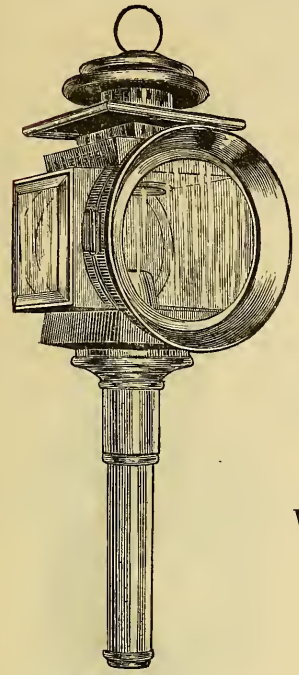
Gold Mouldings, Silver Lined, add $1 00 extra per pair; Silver Stems, $1 50 extra per pair; Gold Stems, $2 00 extra per pair.

CALIFORNIA SQUARE.

ALL BLACK OUTSIDE, SILVER LINED.

	SIZE OF BODY.	PER PAIR.
No. 1.	5½ × 6¼ in.	$20 00
2	5¼ × 6	18 00
3.	4¾ × 5½	16 00
4.	4¼ × 5	12 00
5.	3¾ × 4½	10 00

The California Lamp is made in Black only.



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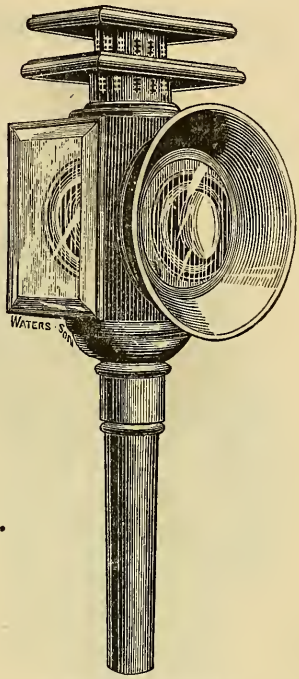


WHITE MANFG. CO'S.

English Mail. *French Flange.*

ENGLISH MAIL.

SILVER MOULDINGS AND FLANGE, SILVER LINED.

	SIZE OF BODY.	EXTREME LENGTH.	SUITABLE FOR	PER PAIR.
No. 1.	6 × 6¾ in.	18 in.	Chariot or Four-in-Hand	$29 00
2.	5½ × 6¼	17	Drags	27 00
3.	5 × 5¾	16	Dog Carts	25 00
4.	4½ × 5½	15	" "	23 00
5.	4 × 5	14	6-Seat Phaeton or Small Drag	21 00
6.	3¾ × 4¾	13	Small Phaeton	18 00
7.	3½ × 4½	12	Rockaway	12 00
8.	3 × 4	11	Buggy	9 00
9.	2¾ × 3¼	10	Pony Phaeton	6 50

Gold Mouldings and Flange, Silver Lined, add $2 00 extra per pair; Silver Stems, $1 50 extra per pair; Gold Stems, $2 00 extra per pair.

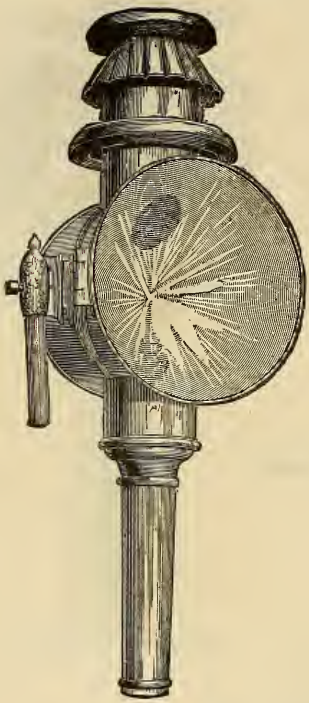
FRENCH FLANGE.

SILVER MOULDINGS, SILVER LINED OR GOLD CENTERS.

	SIZE OF BODY.	EXTREME LENGTH.	SUITABLE FOR	PER PAIR.
No. 4.	4⅞ × 5⅛ in.	17 in.	Dog Cart (large)	$25 00
5.	4½ × 4⅞	15	6-Seat Phaeton (small)	22 00
5.	4⅛ × 4⅜	13½	6-Seat Rockaway or Phaeton	20 00
7	3⅞ × 4⅛	11	Small Phaeton or Drag	18 00

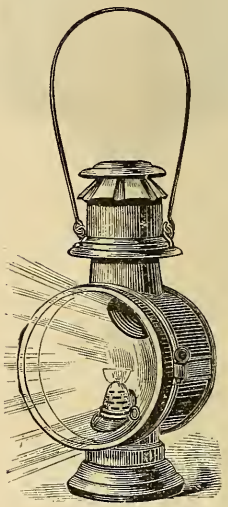
Gold Mouldings, Silver Lined or Gold Centers, add $2 00 extra per pair; Silver Stems, $1 50 extra per pair; Gold Stems, $2 00 extra per pair.

STAGE OR HACK LAMP.



LAMPS.

REFLECTING HAND LANTERN.



Boudren's Patent.

STAGE LAMP.

No. 1.	8 in. Glass	$28 00	per pair.
2.	7 "	25 00	"
3.	6¼ "	20 00	"

REFLECTING HAND LANTERN.

Japanned	$7 00	each.
Brass or Oroide, Polished; no iron about them	9 00	"
Nickel or Silver, Full Plated	12 00	"

Red or Engraved Glasses cost extra.

The Stage Lamps throw a powerful light 200 feet ahead of the horses, enabling the driver to proceed many times when without them it would be impossible. They are made on same principle as the Dash Lamps, and will burn on mountain stages under all circumstances. They burn kerosene oil without a chimney, 12 hours after one filling.

The Hand Lanterns are adapted for the use of engineers, miners, firemen, conductors, brakemen, steamboatmen, night-watchmen, etc. They burn sperm oil brilliantly or a good quality of kerosene.

ADJUSTABLE DASH LAMP,

WITH LOCOMOTIVE REFLECTOR.

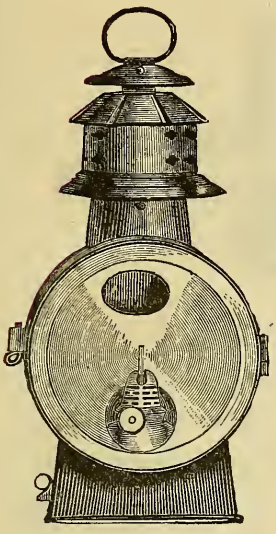


Fig. 1. Front View.

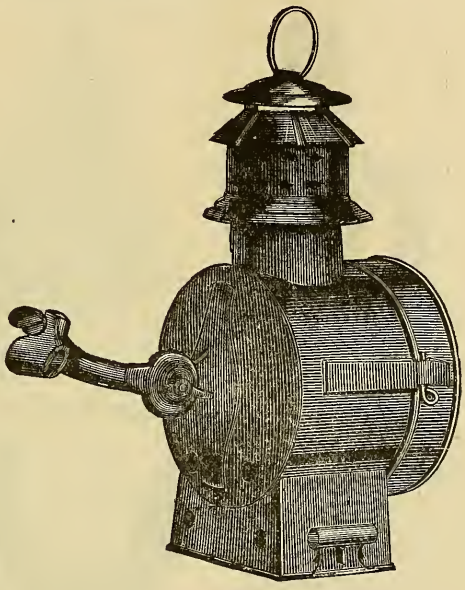


Fig. 2. Side View.

Boudren's Patent.

PRICES.

Regular Dash Lamp, japanned, as shown in cuts, three attachments, height 12 in., face 5¼ in., weight 2¼ pounds ..... $7 00 each.

Extra Dash Lamp, japanned, Silver Mounted, three attachments, height 12 in., face 6½ in., weight 2½ pounds ..... 8 50 "

Double Extra Lamp, japanned, fitted with carriage socket only, height 15½ in., face 8 in., weight 5 pounds ..... 14 00 "

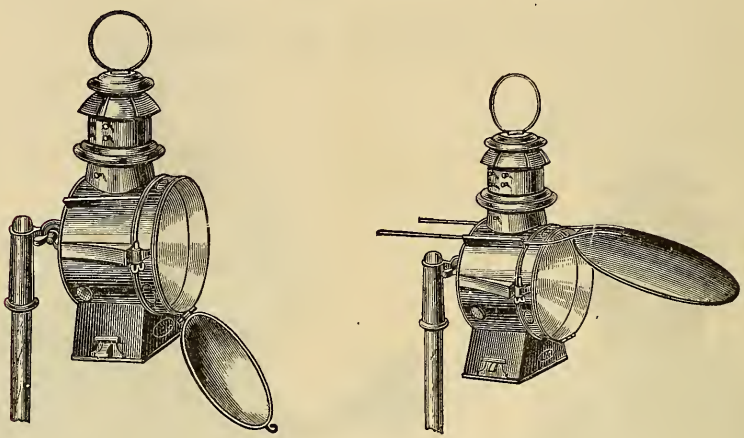
The Carriage Socket is shown in cut of Patent Stage Lamps. The last Lamp is made similar to Fig. 1, of extra large size, and designed for steamboats, wharves, stables, storehouses, omnibuses, large wagons, railroad trains, etc. It throws a powerful light 150 feet ahead, and will burn 15 hours with one filling.

Fig. 1 represents a front view of Reflector and Lamp.

Fig. 2 shows a side view, with Clamp for attaching it to Dash; also, the Adjustable Ratchet-Plates, regulated by a small Thumb Screw, by which it can be adjusted to a Dash of any shape, and held in an upright position. It burns kerosene oil without a chimney.

Attachments can also be furnished for Wooden Dashes, and upright posts of Rockaways, and either right or left hand. They can also be put on the front bow of all top carriages by using the barn attachments. They can be easily detached from Dash Clamp, so that the Lamp can be used about a barn or stable as a hand lantern.

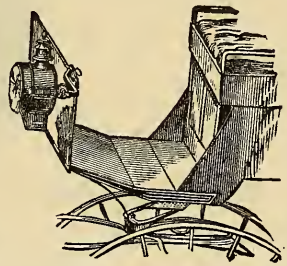
JACK AND DASH LAMPS.



Boudren's Patent.

JACK AND DASH LAMP.

For the use of doctors, expressmen, private gentlemen, market gardeners, stage drivers, livery stables and all others driving dark nights, and for hunting, boating or camping, are indispensable, as they are not affected by wind, rain or jolting.



View of Lamp on Carriage.

FISHING JACK AND DASH LAMP.

For night hunting deer, coons and other animals; also, spearing fish, eels, lighting camps and landings.

PRICES.

Combination Dash and Jack Lamp ..... $7 00 each.
" " " " and Fishing Lamp ..... 9 00 "

In ordering, state distinctly what they are to be used for.

When desired to be used as a Jack for deer hunting, an Adjustable Socket can be furnished, by which it can be placed on a stick or pole in the bow of the boat or canoe. (See cut.) The Lamp is also furnished with a hinged cap or cover, to obscure the light, and when necessary the cap drops down and projects this powerful light 200 feet ahead of the boat or person. No other Lamp has ever been introduced—not even "a Jack on the Head," that would answer fully the purpose for which it was intended. This has received the enthusiastic endorsement of many hunters and sportsmen, who have long realized the necessity of such an invention as this, as it affords them a *reliable light*, with which they can hunt in *any* weather, thereby *doubling* their chances for sport. By drawing out the hinge-pin the cap is instantly taken off, and the lamp is then useful about a camp or can be used on a carriage. For spearing fish an outside reflector is arranged in front of the lamp, which catches the rays of light as they are thrown out, and projects them with great brilliancy in the water, enabling a person to see clearly in three or four feet of water. For catching crabs, eels, and small bait, this lamp is also very useful.

JACK LAMP SUPPORT.

Johnson's Patent.

Support alone	$3 50 each.
Jack Lamp and Support	10 00 "
Jack, and Fishing Lamp and Support	12 00 "

By using above arrangement, the light is under perfect control of the wearer by a slight movement of the body, while the *head, arms and body* are entirely *free.* Its weight is scarcely felt, and the straps really support the back of the wearer. The light being above the head enables the hunter to see the bead of his rifle very distinctly, and when taking aim the light is not thrown off the object, as is the case when attached to the head.

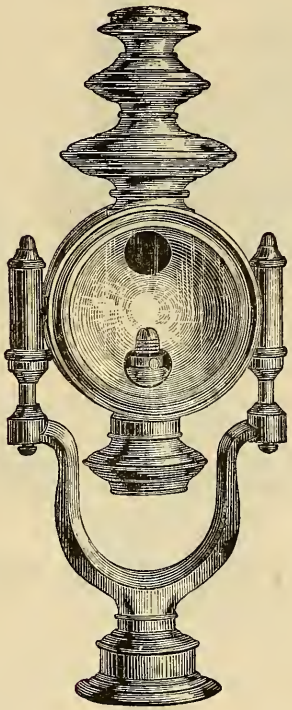
FIREMAN PAPER WEIGHT.

4½ In. High.

Full Silver Plated	$30 00 per dozen.
Gold Figure and Silver Base	36 00 "
Full Gold Plated	42 00 "

REFLECTING SIGNAL LAMP.

DOUBLE SUSPENSION.



Boudren's Patent.

PATENTED AUG. 11, 1874, AND SEPT. 14, 1875.

FOR THE TOP OF AIR-CHAMBERS ON STEAM FIRE ENGINES.

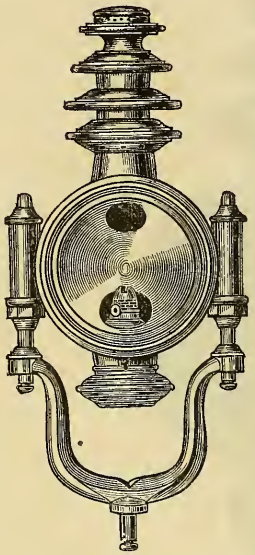
	SIZE OF BODY.	EXTREME HEIGHT.	BRASS OR OROIDE.	SILVER OR NICKEL.
No. 1.	7½ × 6½ in.	22 in.	$52 00	$58 00 each.
2.	7 × 6	20	48 00	54 00 "
3.	6½ × 5½	18	44 00	50 00 "

Rear Glass colored, with name and device cut on it.

Above Lamp can be relied on in severe storms, and to burn under all circumstances. It will throw a light 150 feet in advance of engine, is made in the most durable manner, and is offered at less price than most of the fancy signals now in market.

SIDE LAMP.

DOUBLE SUSPENSION.



Boudren's Patent.

PATENTED AUG. 11, 1874, AND SEPT. 14, 1873.

NEW YORK FIRE DEPARTMENT PATTERN. VERMILION PAINTED BODY.

	SIZE OF BODY.	SIZE OF GLASS.	EXTREME HEIGHT.	OROIDE OR BRASS.	SILVER OR NICKEL
No. 1.	6¾ in.	7¾ in.	17 in.	$64 00	$70 00 per pair.
2.	6	7	16	58 00	64 00 "
3.	5¾	6	15	52 00	58 00 "

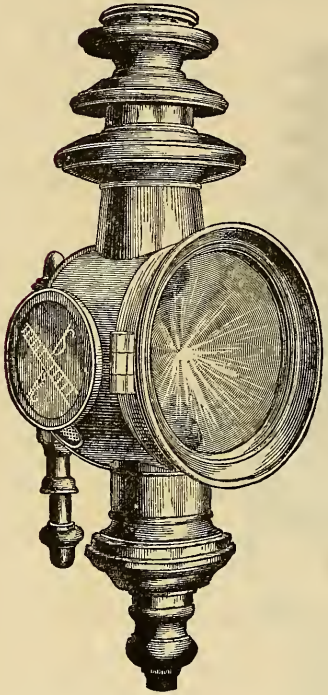
The height of Lamp above given is exclusive of the bracket in which it is suspended.

Wrought Sockets or Supports $2 50 per pair extra. Full Oroide, Nickel or Silver, finished throughout, made only to order. Estimates will be furnished from manufacturers upon application by us.

Above Lamp has been adopted by the New York Fire Department for use on their Self-propellers, and has proved to be the only Lamp that has ever been made that would stand the rough usage to which they are subjected.

BOILER OR SIDE LAMPS.

SINGLE SUSPENSION.



Boudren's Patent.

Ball Pattern.

BOUDREN'S PATENT. VERMILION PAINTED BODY.

	SIZE OF BODY.	EXTREME HEIGHT.	OROIDE OR BRASS.
No. 1.	6¾ in.	20 in.	$48 00 per pair.
2.	6	18	42 00 "
3.	5¼	16	36 00 "

Plain Silver or Nickel, add $2 00 extra per pair; Full Silver or Nickel, add $10 00 extra per pair; Full Oroide or Brass, add $7 00 extra per pair.

BALL PATTERN.

	SIZE OF GLASS.	EXTREME LENGTH.	OROIDE OR BRASS.
No. 4.	4½ in.	18½ in.	$32 00 per pair.
5.	4¼	17½	28 00 "

Silver or Nickel, add $5 00 extra per pair; Wrought Iron Sockets or Holders, $1 50 extra per pair; with Boudren's Patent Attachment, $10 00 extra per pair.

SIGNAL LAMPS.

Globe Pattern.

Oval Pattern.

FOR THE TOP OF AIR-CHAMBER OF STEAM FIRE ENGINES.

GLOBE PATTERN.

	SIZE OF GLASS.	EXTREME HEIGHT.	OROIDE OR BRASS.
No. 1.	7 in.	24½ in.	$60 00 each.
2.	6½	23	55 00 "
3	6	20½	50 00 "
4.	5½	19	45 00 "
5.	5	18	40 00 "

Silver or Nickel, add $5 00 extra per pair.

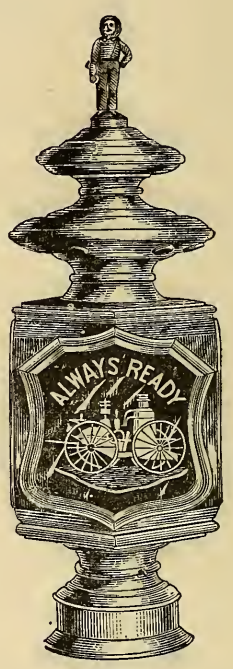
OVAL PATTERN.

	SIZE OF GLASS.	EXTREME HEIGHT.	OROIDE OR BRASS.
No. 1.	6½ × 7 in.	24 in.	$60 00 each.
2.	6 × 5½	23	55 00 "
3.	5½ × 6	22	50 00 "

Silver or Nickel, add $5 00 extra per pair.

SIGNAL LAMPS.

Hexagon Swinging Pattern.



Shield Pattern.

FOR THE TOP OF AIR-CHAMBER OF STEAM FIRE ENGINES.

HEXAGON SWINGING PATTERN.

	SIZE OF BODY.	EXTREME LENGTH.	OROIDE OR BRASS.
No. 1.	8×8 in.	22 in.	$38 00 each.
2.	7×7	21	34 00 "
3.	6×6½	20	30 00 "

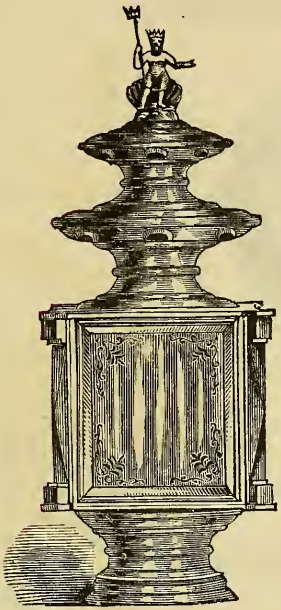
Silver or Nickel, add $5 00 extra per pair.

SHIELD PATTERN.

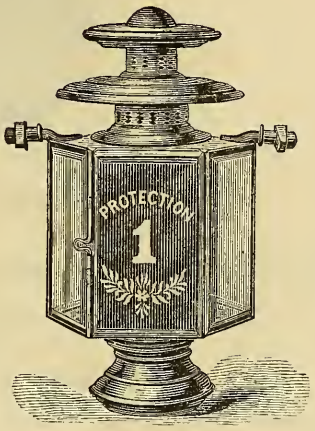
	SIZE OF GLASS.	EXTREME LENGTH.	OROIDE OR BRASS.
No. 1.	6 ×7 in.	23 in.	$70 00 each.
2.	6 ×6½	22	65 00 "
3.	5½×6¼	20	60 00 "
4.	5¼×5¾	19	55 00 "
5.	4¾×5¼	17½	50 00 "

Silver or Nickel, add $5 00 extra per pair.

SIGNAL LAMPS.



Pillar Signal.



Common Signal.

PILLAR SIGNAL.

For Air-Chamber of Steam Fire Engines.

	Size of Body.	Extreme Length.	Oroide or Brass.
No. 1.	7½ × 8 in.	21 in.	$75 00 each.
2.	6¾ × 7¼	20	70 00 "
3.	6⅜ × 6¾	19	65 00 "
4.	5⅞ × 6¼	17½	60 00 "

Silver or Nickel, add $5 00 extra per pair.

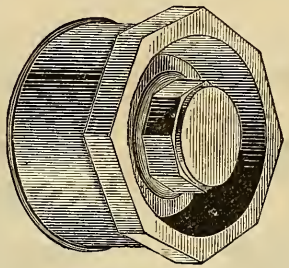
COMMON SIGNAL.

For Hook and Ladder or Hose Carriages.

		Oroide or Brass.
No. 3.	With Plain White Glass; no engraving	$18 00 each.
4.	" " " " "	14 00 "
3.	" Two Plain Colored Glasses, Front and Rear Rest White,	20 00 "
4.	" " " " " " " "	16 00 "
3.	" " Colored Glasses, name and number on them	23 00 "
4.	" " " " " " "	19 00 "

Silver or Nickel, add $5 00 extra per pair.

HEAVY BANDS.



Improved Pattern, with Screw Cap.

FOR ALL DESCRIPTIONS OF FIRE APPARATUS. MADE EXTRA HEAVY AND OF FINE MATERIAL.

FULL BRASS OR OROIDE.

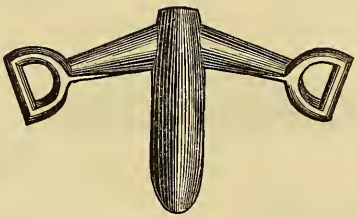
Size, 4 in.	$16 50	per set.
" 4 1/8	17 00	"
" 4 1/4	17 50	"
" 4 3/8	18 00	"
" 4 1/2	18 50	"
" 4 5/8	19 00	"
" 4 3/4	19 50	"
" 4 7/8	20 00	"
" 5	20 50	"
" 5 1/8	21 00	"
" 5 1/4	22 00	"

FULL SILVER OR NICKEL.

Size, 4 in.	$18 50	per set.
" 4 1/8	19 00	"
" 4 1/4	19 50	"
" 4 3/8	20 00	"
" 4 1/2	20 50	"
" 4 5/8	21 00	"
" 4 3/4	21 50	"
" 4 7/8	22 00	"
" 5	22 50	"
" 5 1/8	23 00	"
" 5 1/4	24 00	"

Bands of various styles can be furnished from $8 00 to $15 00 per set.

HEARSE MOUNTINGS.



New Style Pole Crab.

LONG PODS.

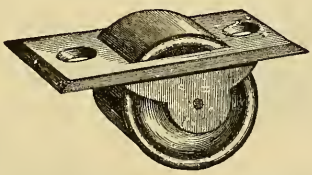
SIZES,	1¼	1⅜	1½	1⅝	1¾	in hole.
Close Plated Silver	$2 25	2 50	2 75	3 00	3 25	each.
" " Oroide	2 25	2 50	2 75	3 00	3 25	"
" " Gold	4 50	4 75	5 00	5 25	5 50	"

Pole Crabs with Ball Ends, add 75 cents to above list.
" " Extra Plated, " 75 " "

WITH MALLEABLE IRON LOOSE HOOKS.

PUT TOGETHER WITH BOLT ON BACK.

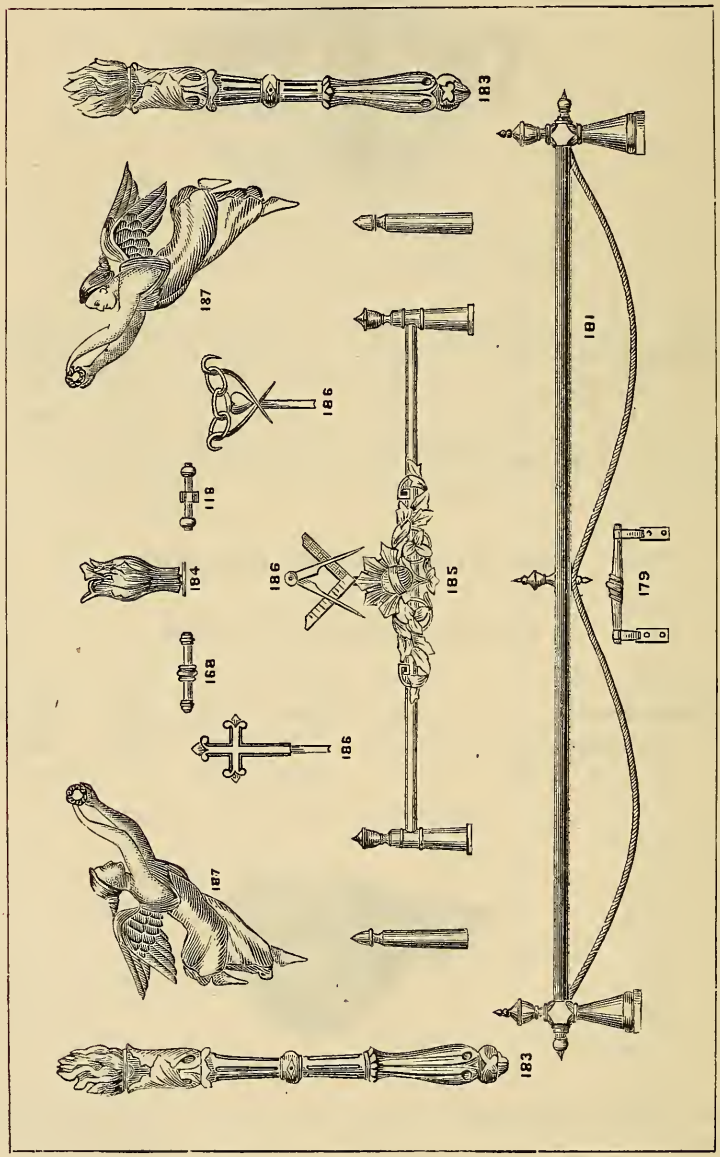
SIZES,	1⅜	1½	1⅝	1¾	in. hole.
Close Plated Silver	$5 00	5 25	5 50	5 75	each.
" " Oroide	5 00	5 25	5 50	5 75	"
" " Gold	8 50	8 75	9 00	9 25	"



Roller.

No. 182. Hearse Table Rollers ..... Silver, 40 cents each.
182 " " " ..... Gold, 45 " "

HEARSE MOUNTINGS.



HEARSE MOUNTINGS.

Illustrated on opposite page.

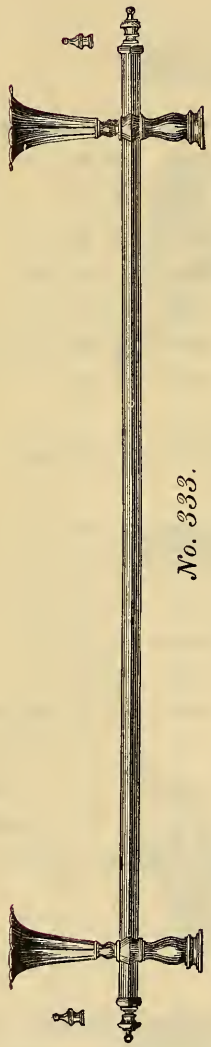
No. 187.	Quarter Angel Ornaments and Bolts	Silver,	$12 00	per pair.
187.	" " " "	Gold,	22 00	"
183.	Panel Torch Ornaments, 22 and 24 in.	Silver,	10 00	"
183.	" " " 22 " 24	Gold,	16 00	"
184.	Plume Sockets	Silver,	2 50	each.
184.	" "	Gold,	3 75	"
168.	Door Handles, latest style	Silver,	4 00	per pair.
168.	" " " "	Gold,	5 25	"
186.	Masonic, Odd Fellows and Rom. Catholic Emblems, to be used on No. 185; Top Rails at option	Silver,	2 00	each.
186.	Masonic, Odd Fellows and Rom. Catholic Emblems, to be used on No. 185; Top Rails at option	Gold,	3 00	"
118.	Door Handles, new style	Silver,	3 00	per pair.
118.	" " "	Gold,	4 00	"
185.	Top Rails, 6 Rails and 12 Posts	Silver,	42 00	per set.
185.	" " 6 " " 12 "	Gold,	60 00	"
181.	⅞ in. Round Rails and Bolts, 6 pins complete	Silver,	3 to 5 ft.,	$32 00
181.	1 " " " " 6 " "	"	4 " 6 "	33 00
181.	⅞ " " " " 6 " "	Gold,	3 " 5 "	45 00
181.	1 " " " " 6 " "	"	4 " 6 "	48 00
Round Extra Table Pins for Rails		Silver,	$10 00	per dozen.

NOTICE.

In ordering Top Rails always send sweep of deck of Hearse, giving length and curve of Rails from outside to outside end of tips on Rails. Also, when ordering Inside Rails, give length over all from tip to tip.

HEARSE MOUNTINGS.

INSIDE RAILS.



No. 333.

No. 354.

No. 357.

No 368.

See opposite page for prices.

HEARSE MOUNTINGS.

INSIDE RAILS.

See opposite page.

No. 333. 1 in. Hexagon Rails and Bolts, 6 Pins and Bouquet Holders, Silver, $55 00
333. 1 " " " 6 " " " Gold, 80 00
335. Hexagon extra Pins for Rails ..... per dozen, Silver, 15 00

No. 354. ⅞ in. Round Rails and Bolts, 6 Pins ..... Silver, 3 to 5 ft., $22 00
354. 1 " " " 6 " ..... " 4 " 6 " 23 00
354. ⅞ " " " 6 " ..... Gold, 3 " 5 " 33 00
354. 1 " " " 6 " ..... " 4 " 6 " 36 00

No. 355. ⅞ in. Round Rails and Bolts, 6 Pins ..... Silver, 3 to 5 ft., $30 00
355. 1 " " " 6 " ..... " 4 " 6 " 31 00
355. ⅞ " " " 6 " ..... Gold, 3 " 5 " 40 00
355. 1 " " " 6 " ..... " 4 " 6 " 42 00

No. 356. ⅞ in. Round Rails and Bolts, 6 Pins ..... Silver, 3 to 5 ft., $31 00
356. 1 " " " 6 " ..... " 4 " 6 " 32 00
356. ⅞ " " " 6 " ..... Gold, 3 " 5 " 42 00
356. 1 " " " 6 " ..... " 4 " 6 " 44 00

No. 357. ⅞ in. Round Rails, 6 Pins and Bolts ..... Silver, $27 00
357. 1 " " 6 " " ..... " 30 00
357. ⅞ " " 6 " " ..... Gold, 40 00
357. 1 " " 6 " " ..... " 42 00

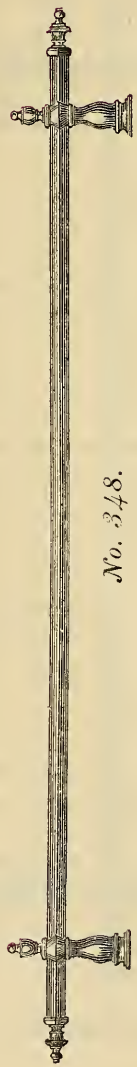
No. 358. 1 in. Rail, same as 357, without Center Ornaments ..... Silver, $25 00
358. 1 " " 357, " " " ..... Gold, 36 00

No. 368. ⅞ in. Round Rails, 2 Bouquet Holders and 6 Pins ..... Silver, $36 00
368. 1 " " 2 " " 6 " ..... " 40 00
368. ⅞ " " 2 " " 6 " ..... " 52 00
368. 1 " " 2 " " 6 " ..... " 55 00

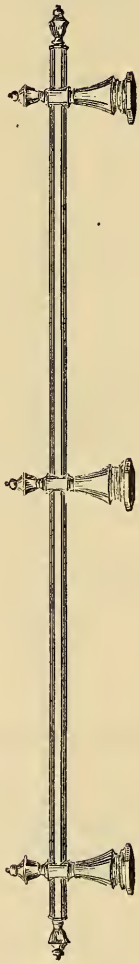
All Rails are elegantly finished and put together in the most improved manner and fully warranted, and of the latest and best designs.

HEARSE MOUNTINGS.

HEARSE RAILS AND TOP RAILS.



No. 348.



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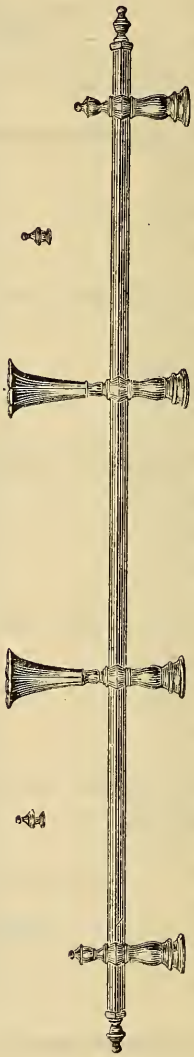


No. 370.

HEARSE MOUNTINGS.

HEARSE RAILS AND TOP RAILS.

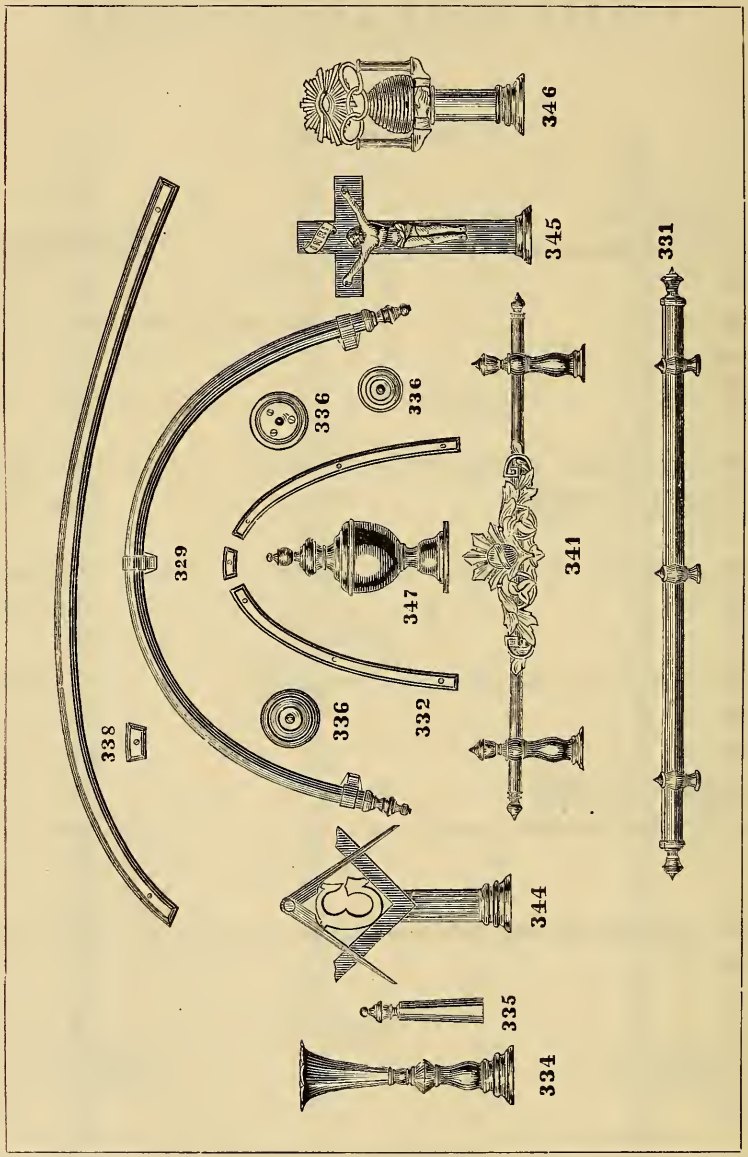
See opposite page.

No. 348.	⅞ in. Hexagon Rails and Bolts, 6 Pins		Silver,	$36 00
348.	⅞ " " " 6 "		Gold,	55 00
348.	1 " " " 6 " without Bouquet Holders,		Silver,	40 00
348.	1 " " " 6 " " " " "		Gold,	60 00
335.	" Extra Pins for Rails	per dozen,	Silver,	15 00
No. 367.	⅞ in. Hexagon, Top Rails, 6 Rails, 14 Posts	per set,	Silver,	$60 00
367.	⅞ " " 6 " 14 "	"	Gold,	85 00
No. 369.	⅞ in. Hexagon Top Rails, 6 Rails, 14 Posts	per set,	Silver,	$75 00
369.	⅞ " " 6 " 14 "	"	Gold,	120 00
No. 369.	⅞ in. Hexagon Rails, new style, 6 Hexagon Pins		Silver,	$52 00
369.	1 " " " 6 " "	"	"	57 00
369.	⅞ " " " 6 " "		Gold,	67 00
369.	1 " " " 6 " "	"	"	70 00
Extra for Bouquet Holders on Center Posts		per pair,	Silver,	8 00
" " " " "		"	Gold,	12 00
No. 370.	¾ in. Hexagon Rails, 4 Bouquet Holders, 4 Posts, 6 Pins		Silver,	$40 00
370.	⅞ " " 4 " " 4 " 6 "	"	"	58 00
370.	1 " " 4 " " 4 " 6 "	"	"	62 00
370.	¾ " " 4 " " 4 " 6 "		Gold,	55 00
370.	⅞ " " 4 " " 4 " 6 "	"	"	88 00
370.	1 " " 4 " " 4 " 6 "	"	"	95 00

The Top Rails, Outside and Inside Rails, Urns, Emblems, etc., made to match of No. 370, make a very beautiful set for Child's Hearse, but are made only to order.

HEARSE MOUNTINGS.

EMBLEMS, URNS, TOP RAILS, ETC.



Above Emblems are made of the finest Oroide Metal, finely finished and plated, and of the newest and best designs.

HEARSE MOUNTINGS.

EMBLEMS, URNS, TOP RAILS, ETC.

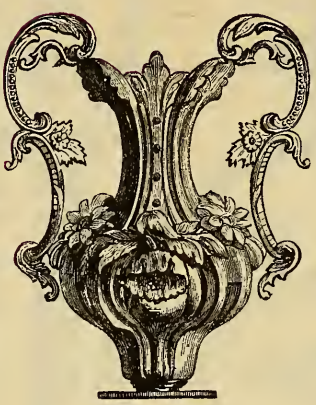
See opposite page.

No. 329.	Hexagon, Bent Inside Front Rails and Supports	each,	Silver,	$12 00
329.	" " " "	"	Gold,	24 00
No. 376.	Round, Bent Inside Front Rails and Supports	each,	Silver,	$12 00
376.	" " " "	"	Gold,	22 00
No. 332.	Hexagon, Oval Door Mouldings and Eggs	per set,	Silver,	$15 00
332.	" " " " "	"	Gold,	22 00
338.	" " Glass " "	"	Silver,	55 00
338.	" " " " "	"	Gold,	80 00
No. 347.	Large Urns to hold Plumes or without	each,	Silver,	$9 50
347.	" " " " "	"	Gold,	14 00
347.	Medium " " " "	"	Silver,	6 00
347.	" " " " "	"	Gold,	10 00
347.	Small " " " "	"	Silver,	5 00
347.	" " " " "	"	Gold,	7 00
No. 334.	Hexagon Bouquet Emblems and Posts	per pair,	Silver,	$12 00
334.	" " " "	"	Gold,	18 00
344.	Masonic Emblems and Columns, new style	"	Silver,	18 00
344.	" " " "	"	Gold,	24 00
346.	Odd Fellows' Emblems and Pillar, "	"	Silver,	18 00
346.	" " " " "	"	Gold,	24 00
345.	Crucifix "	"	Silver,	18 00
345.	" "	"	Gold,	24 00
336.	Bases and Caps to set Emblems on	"	Silver,	6 00
336.	" " " "	"	Gold,	8 00
No. 341.	⅝ in. New Top Rail, 6 Rails and 14 Posts		Silver,	$55 00
341.	⅝ " " 6 " 14 "		Gold,	77 00
No. 331.	30 in. Hexagon, Panel Standard and Tips	per pair,	Silver,	$18 00
331.	30 " " "	"	Gold,	27 00
375.	30 Round, " "	"	Silver,	16 00
375.	30 " " "	"	Gold,	24 00

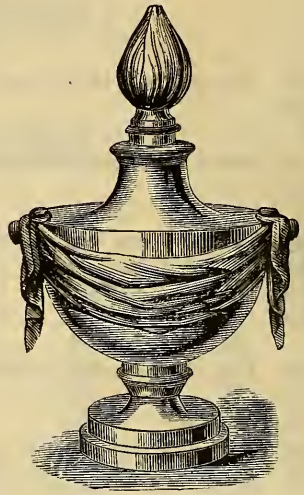
These Standards are put on the rear end Panel alongside the doors, and add much to the external appearance of the Hearse.

Any size Round or Hexagon Top Rails and Posts can be furnished to order.

HEARSE URNS.



No. 2.



No. 384.

No. 2. Ornamental Urn (not for Plumes) ..... Silver, each, $5 00
2. " " " " ..... Gold, " 9 00

No. 2 Urn cannot be used with Plumes.

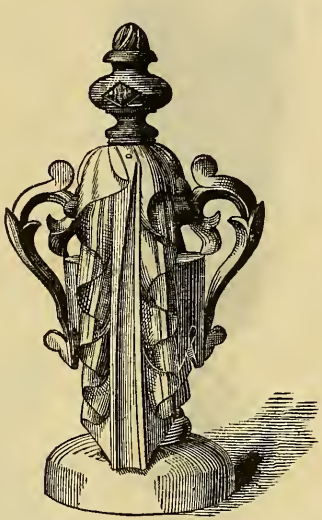
No. 384. New Draped Urn..... Full Silver Body, ... each, $18 00
384. " " " ..... " Gold " ..... " 27 00
384. " " " ..... Silver Body, Gold Drapery.... " 20 00
384. " " " ..... Gold " Silver " .... " 25 00

The top to this Urn unscrews so that a Plume can be inserted in its place when desired, and can also be unscrewed from the base when not in use.

The above patterns are very desirable, and are very handsome designs.

HEARSE URNS.

No. 4.



No. 6.

No. 4.	Wooden Urn	per set,	$25 00
6.	" Draped Urn, large size	"	36 00
6.	" " " child's "	"	33 00

Other styles from $4 00 to $8 00 each.

Wooden Urns can be made to order, from maker's own designs, at reasonable rates.

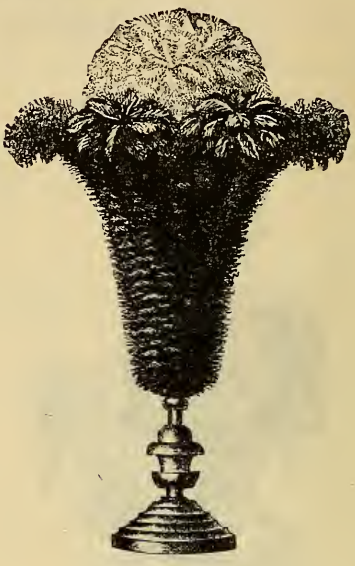
CROSSES.

No. 386.	Small, to be used instead of Plumes in Urns—Silver,	per set,	$20 00
386.	" " " " " —Gold,	"	33 00
386.	extra large (to be used as above)—Silver,	"	36 00
386.	" " " " " —Gold,	"	55 00

Masonic and Odd Fellows' Emblems to be used in same way, and made to order only.

HEARSE PLUMES.

No. 16.
24 INCHES HIGH.



No. 24.
22 INCHES HIGH.

No. 27.
22 INCHES HIGH.

No. 31.
18 INCHES HIGH.

HEARSE PLUMES.

See opposite page.

No. 16.	Black and White Plumes	each,	$10 00
24.	" " "	"	6 00
27.	" " "	"	6 00
31.	" " "	"	12 00

Extra Black Tips, $2 50 each.

No. 16.	All White Plumes	each,	$15 00
24.	" "	"	9 00
27.	" "	"	9 00
3.	Horse Plumes, same as Nos. 24 and 30, only smaller	"	6 00
24.	" " " " 24 " 30, "	"	4 00

Plume Socket.

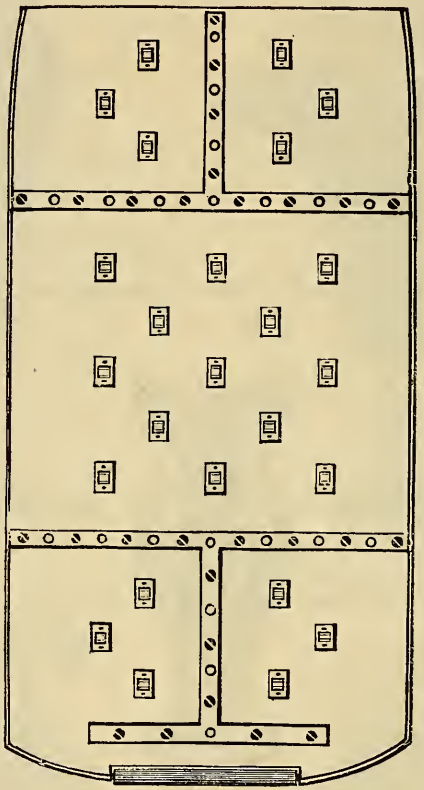
No. 184. Plume Socket, Silver, each, $2 50.

No. 184. Plume Socket, Gold, each, $3 50.

FRINGE, TASSELS, ETC.

2¼ in. wide Imported Fringe	per yard,	Silver, $1 15	Gold, $1 50
2½ " " "	"	" 1 20	" 1 55
2¾ " " "	"	" 1 50	" 1 90
5 in. Imported Banner Tassels	per pair,	" 3 50	" 3 75
5½ " " "	"	" 4 00	" 4 50
6¾ " " "	"	" 4 75	" 5 25
No. 27. Bullion Tassels, 2⅞ in. best	per dozen,	" 4 25	" 5 25
30. " " 3⅛ "	"	" 5 00	" 6 00
Cord, best quality	per yard,	" 40	" 50
Black Horse Nets	per pair,	$30 00 to 40 00	
Bent and Flat Plate Glass	per square foot,	2 50 " 3 00	
Beveling	per inch,	04 " 06	

HEARSE TABLE.



Inside Diagram.

SHOWING THE DISTRIBUTION OF THE ROLLERS AND PIN PLATES.

HEARSE TABLE PLATES.

Silver Plated ..... 10 cents per in.
Gold " ..... 15 " "

Screws for Plates extra.

These Table Plates are to be let into the Table, unless the new style Beveled Plates are used, which can be screwed flat upon the Table.

In ordering Plates be careful to give the lengths of the Cross Plates, also lengths of the up and down Plates between the Cross Plates, as they are furnished mitered and fitted ready to put together.

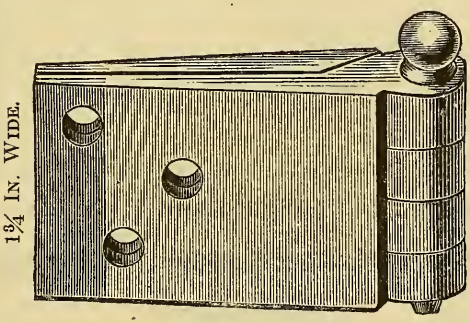
HEARSE END ROLLER AND SUPPORT.

Polished Rosewood End Rollers and Oroide Metal Supports.

Roller and Silver Plated Support ..... $5 00 per set.
" " Gold " " ..... 5 75 "

This is the best and most serviceable Roller now made. Iron Pins hold the Roller in the Metal Supports, consequently there is very little wear on the Pins. The Supports are made so that the Plated Moulding around the edge of the back end of the Table slips nicely under them and makes a neat finish.

PLATED HEARSE HINGES.



Solid Oroide.

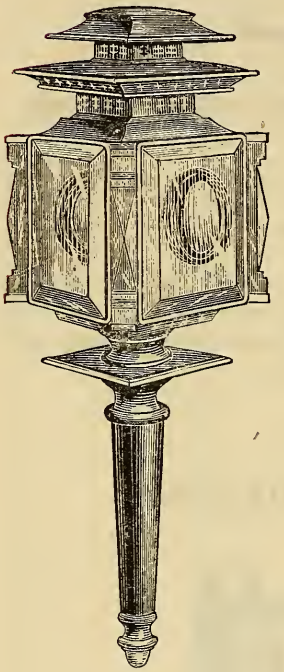
Silver Plated.

Lengths	2	2¼	2½	2¾	3 in.
Price	$3 00	3 12	3 25	3 38	3 50 per pair.

Gold Plated.

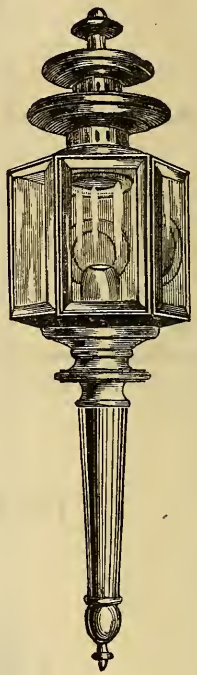
Lengths	2	2¼	2½	2¾	3 in.
Price	$3 50	3 62	3 75	3 88	4 00 per pair.

HEARSE LAMPS.



Pillar.

WHITE MANFG. CO'S.



Hexagon.

HEXAGON LAMP.

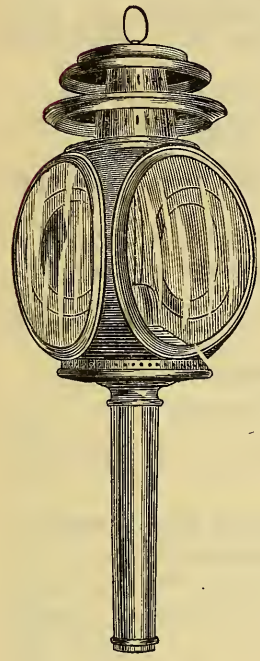
EXTRA HEAVY SILVER BODIES, TAILS AND HEADS; FULL MOUNTED, SILVER LINED.

	SIZE OF BODY.	EXTREME LENGTH.	PER PAIR.
No. 1.	6¼ × 6¼	28 in.	$45 00
2.	6 × 6	27	43 00
3.	5¾ × 5¾	26	41 00
4.	5½ × 5½	25	40 00
5.	5¼ × 5¼	24	38 00

PILLAR LAMP.

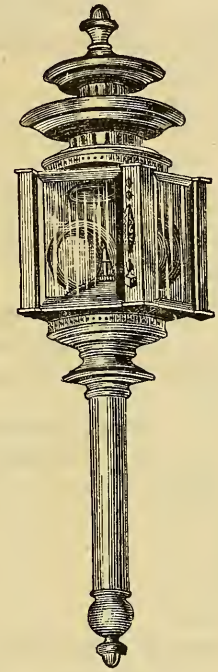
	SIZE OF BODY.	EXTREME LENGTH.	MOUNTINGS.	PER PAIR.
No. 1.	5¾ × 6	23 in.	Full Silver	$65 00
1.	5¾ × 6	23	" Gold	80 00

HEARSE LAMPS.



Yelger.

WHITE MANFG. CO'S.



Pentagon.

PENTAGON PEDESTAL.

ALL SILVER OUTSIDE, SILVER LINED OR GOLD CENTERS.

SIZE OF BODY.	EXTREME LENGTH.	PER PAIR.
No. 1. 5¾ in.	28 in.	$70 00
2. 5½	26	67 00

ALL GOLD OUTSIDE, SILVER LINED OR GOLD CENTERS.

SIZE OF BODY.	EXTREME LENGTH.	PER PAIR.
No. 1. 5¾ in.	28 in.	$80 00
2. 5½	26	75 00

YELGER.

No. 1. Full Silver Mounted	$55 00
1. " Gold "	65 00

PENCIL AND STRIPING BRUSHES.

Rose Camel's Hair Pencils.

FOR LETTERING AND STRIPING.

	Per Gross.
No. 1 Quill, any length of hair	$1 80
2 " " " "	2 10
3 " " " "	2 55
4 " " " "	3 00
5 " " " "	3 75
6 " " " "	4 50
7 " " " "	5 40
8 " " " "	6 30
Assorted, Nos. 1 to 8, any length of hair	3 40

Each length put up in separate gross packages.

Super Camel's Hair Pencils.

FOR LETTERING AND STRIPING.

	Per Gross.
Assorted, Nos. 1 to 8, any length,	$4 00

Black Sable Stripers.

ORDINARY.

No. 1	per gross,	$9 00
2	"	10 00
3	"	14 00
4	"	17 00
5	"	21 00
6	"	24 00
7	"	30 00
8	"	33 00
Nos. 1 to 8, assorted	"	18 00
1 " 8, "	per dozen,	2 00

Super French Black Sable Pencils.

LETTERERS.

No. 1.	¾ in	per dozen,	$1 00
2.	⅞	"	1 50
3.	1	"	2 25
4.	1⅛	"	3 25
5.	1⅛	"	4 00
6.	1¼	"	5 50
7.	1⅜	"	6 50
8.	1½	"	7 50
Assorted 1 to 8		"	4 00
No. 10. Extra large		"	10 00
12. "		"	15 00

Black Sable Patent Sword Pencils.

IN SILVER TUBES FOR STRIPING.

No. 1	per dozen,	$4 00
2	"	6 00
3	"	9 00

Bristle Marking Brushes.

Extra assorted, 1 to 6,	per dozen,	$1 25
" " 1 " 6,	" gross,	10 00

Camel's Hair Marking Brushes.

Assorted, 4 to 10	per dozen,	$1 00
" 4 " 10	" gross,	10 50

Swan Quill C. H. Pencils.

SQUARE TOPS.

All lengths, ½ to 2½ in., per gross, $10 00; per dozen, $1 00

Metal Bound C. H. Pencils.

SQUARE TOPS, EXTRA LARGE.

From 1 to 2½ in.	per gross,	$16 50
" 1 " 2½	" dozen,	1 50

C. H. Patent Sword Pencils.

FOR STRIPING.

Nos. 1, 2 and 3	per gross,	$13 50
1, 2 " 3	" dozen,	1 50

Siberian Ox Hair Pencils.

GOLD AND SILK BOUND. VERY ELASTIC.

		Lettering.	Striping.
No. 1	per dozen,	$0 70	$0 85
2	"	80	1 00
3	"	1 00	1 25
4	"	1 25	1 50
5	"	1 50	1 75
6	"	1 75	2 00
7	"	2 00	2 40
8	"	2 25	2 80
10	"	5 50	7 00
12	"	7 50	9 50
Assorted, 1 to 8,	"	1 50	1 75
" 1 " 8,	per gro.,	15 00	18 00

Red Sable Artists' Brushes.

ROUND AND FLAT POLISHED CEDAR HANDLES.

No. 1	per dozen,	$1 10
2	"	1 20
3	"	1 35
4	"	1 50
5	"	1 75
6	"	1 90
7	"	2 10
8	"	2 40
9	"	2 75
10	"	3 10
11	"	3 45
12	"	3 75
Nos. 1 to 12, assorted,	"	2 25

VARNISH BRUSHES.

Coach Painter's Spoke Brushes.

Extra Fine French Bristles, Twine and Quill Bound.

No. 1	per dozen,	$12 75
2	"	15 50
3	"	18 00

Extra Thick Camel's Hair Color Brushes.

Flat Long or Short Cedar Handles.

1 in.	per dozen,	$3 50
1½	"	6 25
2	"	9 00
2½	"	13 00
3	"	16 50

Camel's Hair Spalters or Mottling Brushes.

Short Cedar Handles.

1 in.	per dozen,	$2 55
1½	"	4 50
2	"	6 75
2½	"	10 00
3	"	13 50

English Camel's Hair Varnish or Copying Brushes.

Flat Cedar Handles.

1 in.	per dozen,	$2 70
1½	"	4 00
2	"	5 40
2½	"	7 50
3	"	10 00
3½	"	12 00
4	"	15 00
4½	"	18 00

Camel's Hair Imp. Flowing Varnish or Coach Color Brushes.

1 to 4 in. wide, per in., $0 50

Black Fitch Flowing Var. Brushes.

Thick, 1 to 4 in. wide	per in.,	$0 60
" Chisel point, 1 to 4 in. wide	"	75

Badger Hair Flowing Var. Brushes.

Thick, 1 to 4 in. wide	per in.,	$0 75
" Chisel point, 1 to 4 in. wide	"	90

Imp. Bristle Flowing Var. Brushes.

Extra Fine Chisel Point.

1, 1½, 2, 2½, 3 in. wide, per in., $0 60

Thum's Chisel Pointed Varnish.

Flat.

½ in.	Half	Elastic	per dozen,	$3 60
¾	"	"	"	5 40
1	"	"	"	7 20
1½	"	"	"	10 80
2	"	"	"	15 00
2½	"	"	"	18 00
3	"	"	"	24 00

Thum's Chisel Pointed Varnish.

Oval. Copper Bound.

No. 00.	Half	Elastic	$12 00
0.	"	"	14 40
1.	"	"	16 20
2.	"	"	18 00
3.	"	"	21 00
4.	"	"	24 00
5.	"	"	27 00
6.	"	"	30 00
7.	"	"	33 00
8.	"	"	42 00

Extra Flat Bristle Var. Brushes.

1 in.	per dozen,	$2 25
1½	"	3 25
2	"	4 50
2½	"	6 00
3	"	7 50
3½	"	10 50
4	"	12 00

Ex. Ex. Flat Bristle Var. Brushes.

1 in.	per dozen,	$2 75
1½	"	4 00
2	"	5 50
2½	"	7 00
3	"	9 00
3½	"	12 50
4	"	14 00

Ex. Ex. Flat Bristle Var. Brushes.

Extra Thick, Fine Chisel Point.

1 in.	per dozen,	$3 75
1½	"	5 40
2	"	7 00
2½	"	9 00
3	"	10 80
4	"	18 00

Can also Furnish the Following:

Grainers' Brushes and Tools.
Gilders' " " Materials.
Gold and Silver Leaf Bronze Powders, Gold Paint.
English and American Tube Paints.
Extra Fine Dry Colors.
Painters' Cutlery,
Glaziers' Diamonds.
Feather Dusters.
Chamois Skins.
Rubbing Felt.
Roof, Scrub and Counter Brushes.

PAINT AND VARNISH BRUSHES.

C. M. Paint Brushes.

WIRE BOUND.

Full size, white outside. Used mostly for common painting.

No. 6	per dozen,	$2 50
5	"	3 00
4	"	3 75
3	"	4 50
2	"	5 50
1	"	6 50
1-0	"	8 00
2-0	"	9 50
3-0	"	11 50
4-0	"	12 50
5-0	"	14 00
6-0	"	16 00

Extra Gloss Paint Brushes.

WIRE BOUND.

This Brush is made from all White *selected* Russia Bristles. Every Brush warranted.

No. 1	per dozen,	$13 50
1-0	"	17 50
2-0	"	20 50
3-0	"	24 50
4-0	"	29 50
5-0	"	34 50
6-0	"	39 50
7-0	"	42 50

Extra Oval Varnish Brushes.

WIRE BOUND.

Full size. Best quality of White Russia Bristles, warranted.

No. 6	per dozen,	$3 25
5	"	4 75
4	"	5 50
3	"	6 75
2	"	9 00
1	"	11 00
1-0	"	13 00
2-0	"	16 00
3-0	"	19 00
4-0	"	22 00
5-0	"	25 00
6-0	"	29 00
7-0	"	33 00

Painters' Dust Brushes.

ALL BRISTLES.

No. 1	per dozen,	$9 00
2	"	12 00
3	"	15 00
4	"	17 00
5	"	21 00
7. Extra large	"	28 00
Flat	"	12 00

Extra Paint Brushes.

WIRE BOUND.

White outside; Gray center. Warranted all Bristles.

No. 6	per dozen,	$3 50
5	"	4 00
4	"	4 75
3	"	6 00
2	"	7 50
1	"	10 00
1-0	"	12 00
2-0	"	15 00
3-0	"	18 00
4-0	"	21 00
5-0	"	24 00
6-0	"	28 00

Extra Extra Paint Brushes.

WIRE BOUND.

Very large. Best quality. Made of all White *selected* Russia Bristles. Extra heavy Brush, warranted.

No. 3-0	per dozen,	$27 00
4-0	"	35 50
5-0	"	42 00
6-0	"	48 50
7-0	"	50 50
8-0	"	56 00

Extra Oval Chiseled Var. Brushes.

WIRE BOUND.

Best quality. All White selected French Bristles. For Railroad Cars.

No. 4	per dozen,	$10 50
3	"	14 00
2	"	17 00
1	"	20 00
1-0	"	23 00
2-0	"	26 00
3-0	"	29 00
4-0	"	32 00

Extra Extra Oval Varnish Brushes.

WIRE BOUND.

Full size. Selected Russia Bristles. Best quality for fine work. Warranted.

No. 1-0	per dozen,	$15 00
2-0	"	18 00
3-0	"	23 00
4-0	"	26 00
5-0	"	32 00
6-0	"	36 00
7-0	"	40 00

ENGLISH VARNISHES.

Harland's Prices in Gold.

	PER GALLON.
Best Pale Durable Body Varnish, for Finishing Coats on Carriage Bodies	$7 00
Railway Body Varnish, for Cars and hurried work	7 00
Best Hard-drying Body Varnish, for Under-coats } Finish with Durable or Railway Body }	7 00
Best Pale Carriage Varnish, for Wheels and Under Parts	6 00
Best Black Japan	6 00
Best Enamel Japan	6 00

Noble & Hoare's Prices in Gold.

	PER GALLON.
Wearing Body Varnish, Slow-drying	$6 25
Medium " " Middle "	6 25
Hard " " Quick "	6 25
Elastic Carriage "	5 50
Hard " " Quick-drying	5 50
Black Japan	5 50
Black Enamel, for Leather Tops	5 50
Japan Gold Size, Brown Japan	4 00
Surfacing Varnish, Rubbing	4 00

VALENTINE'S

AMERICAN VARNISHES.

	PER GALLON.
Wearing Body Varnish	$6 00
Medium-drying Body Varnish	6 00
Elastic Gear Varnish	5 00
One-coat Coach Varnish	4 50
Hard-drying Body Varnish	5 00
Elastic Leveling Varnish	4 50
Quick Leveling Varnish	4 00
Black Body Varnish	4 50
Black Color and Varnish	4 00
Enameled Leather Varnish	4 00
Quick Black Lacquer	4 00
Japan Gold Size	3 50
Crown Coach Japan	1 75
Ground Rough Stuff	3 00
Dark Permanent Wood Filling	4 00
Light " " "	4 00

WEST'S
ENAMELED LEATHER DRESSING.

For Carriage Tops and Dashes.

Put up in 1-Gallon Cans.....$5 00 per gallon.

DIRECTIONS FOR USING:—Clean the Top well; spread the Dressing quick and even with a soft brush. Do not rub it after it begins to set. Should the Dressing be too thin, leave the cork out of the can a few days.

SUPERFINE COACH COLORS.

The List of Superfine Coach Colors herein given is to show, as far as possible, what colors are chiefly used by the practical Coach, Car, and Decorative Painter, for whose requirements they are specially prepared. The advantages to be derived from the use of these paints are apparent, since the workman is provided clean, quick-drying colors, ground to a degree of fineness which it is impossible for him to equal with the means at his command.

The Carmines and Lakes are unsurpassed in body, brilliancy, and such other qualities as are requisite for the satisfactory working of such colors.

The Greens, Yellows, Vermilions, and other body colors, are of absolute purity. They are so ground as to insure a flat, quick-drying surface, without the addition of any material except such as is necessary to cause the paint to work freely, and neither will they deteriorate with age; and if on opening the can the color be covered with water or spirits, the contents will remain fresh for any length of time.

PRICE LISTS.

	PER POUND.
Ivory Black, Superfine	$ 0 50
" " Extra Fine	40
" " Fine	35
Prussian Blue	1 25
Ultramarine, Superfine	1 00
French Carmine, No. 40, L. & D.	10 00
Lake, English Crimson, No. 1	6 50
" " " 2	5 00
" Amer. D. Crimson, No. 1	1 50
" " " " 2	1 25
" Carmine, No. 1	3 50
" " 2	2 50
" Munich, No. 1	4 50
" " 2	3 50
" Scarlet, Light and Deep	6 50
" " No. 2	5 00
" English Rose, No. 1	1 25
" " " 2	1 00
" Carmoisin	75
" Ruby	75
" Body, Light and Deep	1 25
" French	1 00
" English Purple, No. 1	7 00
" " " 2, D. and Ex. D.	5 00
" Carriage-Part	75

	PER POUND.
Silver White	$0 25
Indian Red	40
Tuscan Red	75
Turkey Red	40
Berlin Red	75
English Rose Pink	50
Eng. Vermilion, Pale and Deep	2 00
Italian Sienna, Burnt	37
" " Raw	37
Turkey Umber, Burnt	35
" " Raw	35
Van Dyke Brown	45
Berlin Brown	2 00
Chocolate	40
Dutch Pink	50
Chrome Yellow, Lem., Or. & D. Or.	50
" " French	75
Naples Yellow	1 25
Lake, Yellow	2 00
Golden Ochre	25
Car Yellow	40
Pure Green, Lt., Med. and D.	1 00
Double Strength Coach Green	75
Chrome Green, Lt., Med. and D.	40
Quaker Green, Lt., Med. and D.	50
Ultramarine Green	1 00

One-fourth Pound Cans, 25 cents per pound advance. Two-Ounce Cans, 50 cents per pound advance.

MALLEABLE IRONS.

Ferrules.

ROUND, OPEN END.

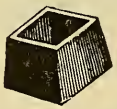
Measure inside Small End.

Sizes,	½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝	1¾	2 in.
Nos.	0	1	2	3	4	5	6	7	8	9	10	11

ROUND, CLOSED END.

Measure inside Large End.

Sizes,	¾	⅞	1	1⅛	1¼ in.
Nos.	12	13	14	14¼	14½

SQUARE,  OPEN ENDS.

Measure inside Small End.

Sizes,	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½ in.
Nos.	A	B	C	D	E	F	G	H

CALIFORNIA PATTERN. ROUND, EXTRA LONG.

Measure inside Small End.

Sizes,	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝	1¾ in.
Nos.	15	16	17	18	19	20	21	22	22¼	22½

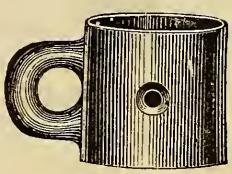
CALIFORNIA PATTERN. SQUARE, EXTRA LONG.

Measure inside Small End.

Sizes,	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝	1¾ in.
Nos.	23	24	25	26	27	28	29	30	31	32

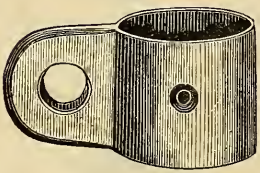
MALLEABLE IRONS.

Single Tree Ferrules.

ROUND,  1¾ IN. DEEP.

With Loop or Eye.

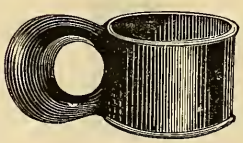
Sizes,	1¼	1⅜	1½	1⅝	1¾ in.
Nos.	33	34	35	35¼	35½

ROUND,  1¾ IN. DEEP.

With Loop or Eye.

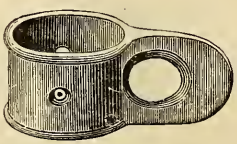
Sizes,	1¼	1⅜	1½	1⅝	1¾ in.
Nos.	36	37	38	38¼	38½

Double and Single Tree Center Irons.

ROUND,  2¼ IN. DEEP.

Eye or Loop, 1¼ in. diameter.

Sizes,	2¼	2⅜	2½	2¾	3 in.
Nos.	39	40	41	42	42½

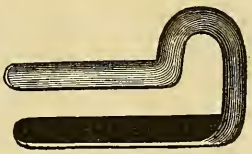
OVAL,  2¼ IN. DEEP.

Eye or Loop 1¼ in. diameter.

Sizes,	2¼	2⅜	2½	2¾	3 in.
Nos.	A	B	C	D	E

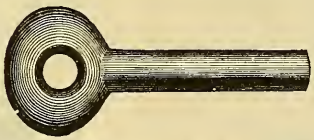
MALLEABLE IRONS.

Double and Single Whiffletree End Irons.

MEASURE  BETWEEN CLIPS.

Sizes,	1¼	1⅜	1½ in.
Nos.	43	44	44½

Whiffletree Start or Eye.

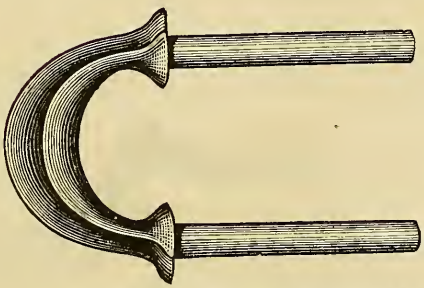
FOR THE END OF  WHIFFLETREE.

No. A. 3½ in. long, ½ in. Eye.

Doubletree Bolt and Staple.

FOR THE END OF DOUBLETREE.

No. B. Shank 4½ in. long.

FOR THE CENTER  OF THE DOUBLETREE.

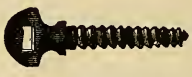
No. C. 4 in. wide, 7¾ in. entire length. Shanks 5 in. long.

MALLEABLE IRONS.

Whiffletree Tongues.

Plain Shank with Shoulder.

No. 45.	2¾ in. long,	5/16 in.	Shank.
46.	3¼ "	⅜ "	
47.	3¼ "	7/16 "	
47¼.	3⅝ "	7/16 "	
47½.	4 "	½ "	



Screw Shank with Shoulder.

No. 48.	2¾ in. long,	5/16 in.	Shank.
49.	3¼ "	⅜ "	
50.	3¼ "	7/16 "	
50¼.	3⅝ "	7/16 "	
50½.	4 "	½ "	

Plain Shank with Shoulder.

No. 51.	2¾ in. long,	5/16 in.	Shank.
52.	3¼ "	⅜ "	

Screw Shank with Shoulder.

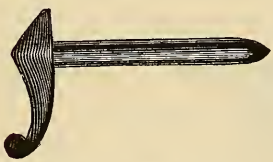
No. 53.	2¾ in. long,	5/16 in.	Shank.
54.	3¼ "	⅜ "	

Plain Shank with Shoulder.

No. 54½.	2¾ in. long,	5/16 in.	Shank.
55.	3¼ "	⅜ "	

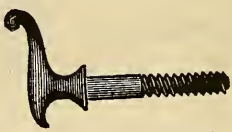
Screw Shank with Shoulder.

No. 56.	2¾ in. long,	5/16 in.	Shank.
57.	3¼ "	⅜ "	



Plain Shank with Shoulder.

No. 58.	2⅞ in. long,	⅜ in.	Shank.
58¼.	3½ "	⅜ "	
58½.	3½ "	7/16 "	



Screw Shank with Shoulder.

No. 59.	2⅞ in. long,	⅜ in.	Shank.
59½.	3½ "	⅜ "	
60.	3½ "	7/16 "	

Weller's Trace Hook.

No. 61.	1¾ in. long,	⅜ in.	Shank.
62.	2 "	7/16 "	
63.	2¼ "	½ "	
64.	2½ "	9/16 "	

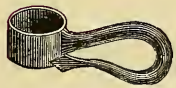
MALLEABLE IRONS.

Whiffletree Hooks.

Right and Left.
No. 65. 3 in. long.

Right and Left.
No. 66. 3¼ in. long.

No. 67. To be used with spring. Full length, 5 in.



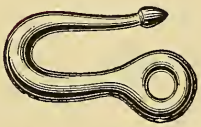
Right and Left.

Sizes,	1¼	1½ in. hole.
Nos.	68	69

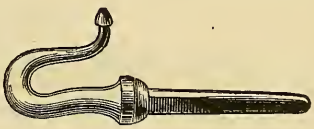
Right and Left.

Sizes,	1	1⅛	1¼	1½ in. hole.
Nos.	70	71	72	73

Stay Chain Hooks.



No. 74. 4⅛ in. long, ⅝ in. Eye.



No. 75. 4½ in. long Shank.

Whiffletree Sockets.

No. A. With Socket. 4 in. long.
⅞ in. inside large end.

No. B. With Socket. 3¾ in. long.
$\frac{13}{16}$ in. inside large end.

Sizes, ¾ ⅞ 1 1⅛ in.
Nos. C D E F

4 in. long.

Sizes, ¾ ⅞ 1 1⅛ in.
Nos. G H I J

MALLEABLE IRONS.

Whiffletree Plates.

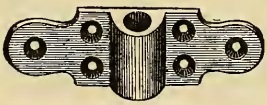
No. 76. 5 in. long.

No. 77. 3¼ in. long.

No. 78. 3 in. long.

No. 79. 4 in. long.

No. 80. 5 in. long.

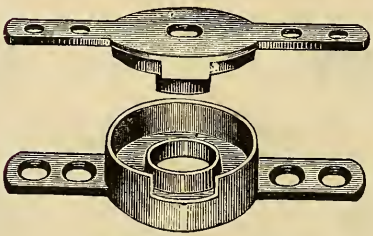


3⅞ in. long. Used in Front.

Sizes,	1¼	1½	1⅝	1¾	2 in. wide.
Nos.	81	82	83	84	85

Whiffletree Couplings.

In Pairs.



No. 85½. With Stop.

1¾ in. wide, 4⅜ in. long.

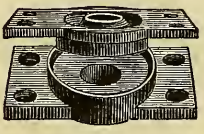
MALLEABLE IRONS.

Whiffletree Couplings.

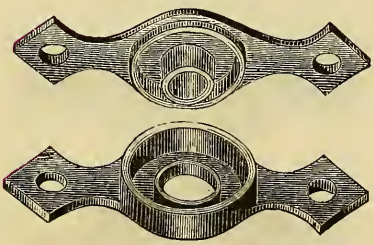
In Pairs.

No. 85¾. 1⅜ in. wide, 3⅞ in. long.
86. 1½ " 4 "

No. 86½. 1½ in. wide, 4⅛ in. long.
87. 1¾ " 4½ "
88. 2⅛ " 5 "
88½. 2¼ " 5 "
89. 2½ " 6 "
89¼. 2¾ " 6¼ "
89½. 3 " 6¼ "



No. 90. 1⅜ in wide, 2⅜ in. long.



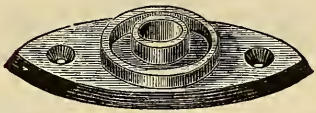
No. 90½. 1⅜ in. wide, 3⅞ in. long.
91. 1½ " 4 "
91¼. 1¾ " 4¾ "
91½. 2¼ " 5½ "

MALLEABLE IRONS.

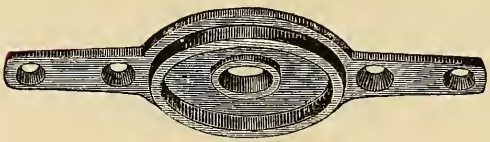
Whiffletree Couplings.

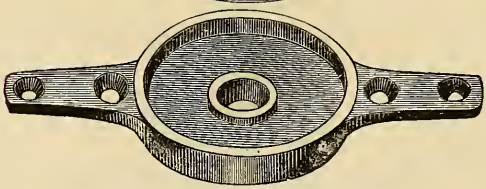
In Pairs.

No. 92. 1¾ in. wide, 3⅜ in. long.
93. 2½ " 3¾ "

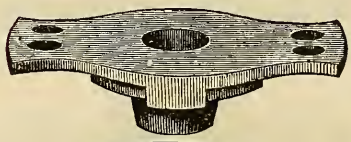


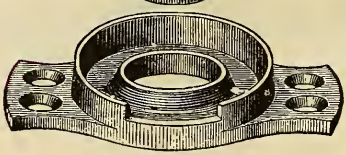
No. 94. 1⅜ in. wide 3⅜ in. long.





No. 95. 2⅝ in. wide, 6¼ in. long.
95½. 3 " 7 "



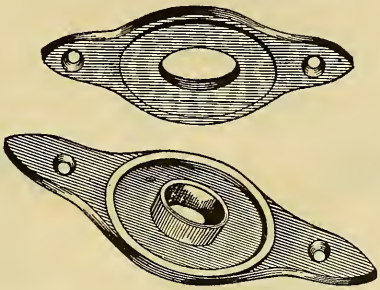


No. 96. 1¾ in. wide, 2½ in. long.

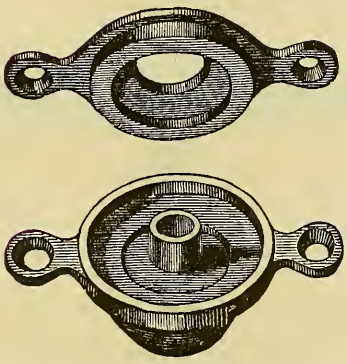
MALLEABLE IRONS.

Whiffletree Couplings.

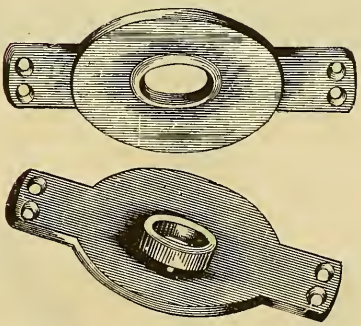
In Pairs.



No. 96¼. 1⅝ in. wide, 3¾ in. long.



No. 96½. 2⅛ in. wide, 3⅝ in. long.

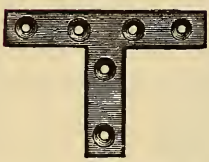


No. 96¾. 2½ in. wide, 4 in. long.

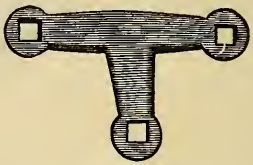
MALLEABLE IRONS.

Tee Irons.

No. 97, 2¾ in. long, 2⅛ in. high.
98, 3⅜ " 2½ "
99, 3¾ " 2¾ "

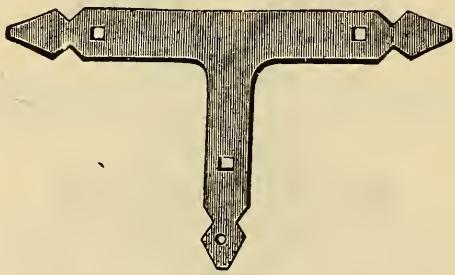


No. 100, 4⅛ in. long, 2¾ in. high.

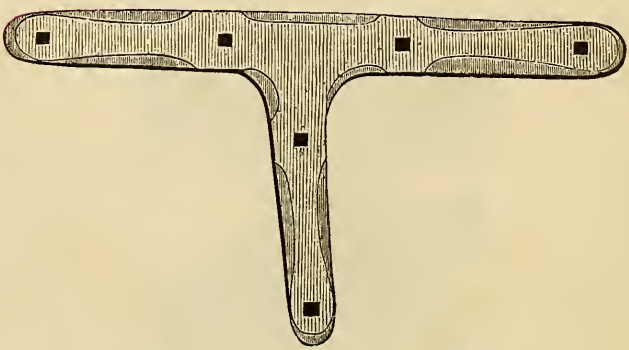


No. 101, 4¼ in. long, 2⅜ in. high.
Right and Left.

Shaft Irons.



No. 102, 8¼ in. long, 5 in. high.
Right and Left.

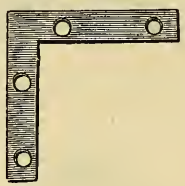


No. 103, 11¾ in. long, 6½ in. high.
Right and Left.

MALLEABLE IRONS.

Corner Irons.

OUTSIDE MEASURES.

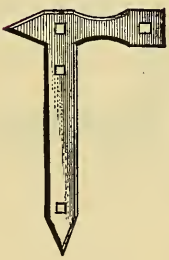


No. 104. $1\frac{5}{8} \times \frac{7}{16}$ in.
105. $2\frac{1}{4} \times \frac{1}{2}$
105½. $2\frac{1}{4} \times \frac{5}{8}$
106. $2\frac{3}{4} \times \frac{1}{2}$

No. 106½. $2\frac{3}{4} \times \frac{5}{8}$ in.
107. $3\frac{1}{2} \times \frac{3}{4}$
108. $4 \times \frac{3}{4}$
109. $4 \times \frac{7}{8}$

Right and Left.

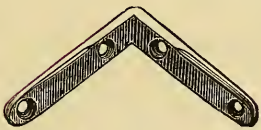
No. 109¼. $3\frac{3}{4} \times 4$ in. In Pairs.



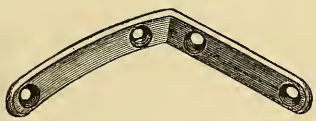
Right and Left.

No. 109½. $4\frac{3}{4} \times 7$ in. In Pairs.

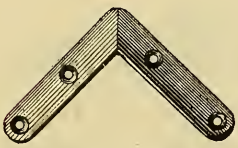
Bevel Corners, Right and Left.



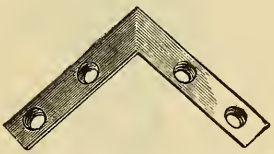
No. 110. $2\frac{3}{4}$ in. long, ½ in. wide.



No. 111. $3\frac{1}{4}$ in. long, $\frac{9}{16}$ in. wide.
112. $3\frac{1}{2}$ " $\frac{5}{8}$ "



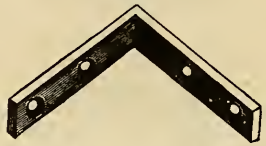
No. 112¼. $3\frac{1}{2}$ in. long, ¾ in. wide.



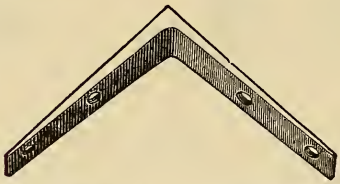
No. 112½. $2\frac{1}{2}$ in. long, ½ in. wide.

MALLEABLE IRONS.

Inside

Square  *Corners.*

No. 113. $2\frac{5}{8}$ in. long, $\frac{9}{16}$ in. wide.



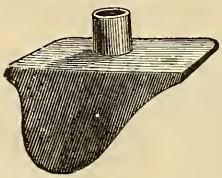
No. 114. Heavy. 4 in. long, $\frac{3}{4}$ in. wide.
115. " $4\frac{7}{8}$ " $\frac{3}{4}$ "

FOR CONCORD BUGGIES.

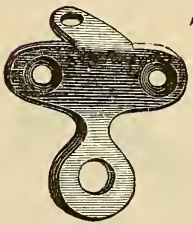
No. A. $3\frac{1}{8}$ in. long, 1 in. wide.
B. Same, except one side is $4\frac{3}{4}$ in. long.

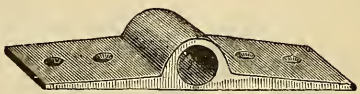
No. C. $2\frac{1}{2} \times 2\frac{1}{4}$ in. outside, $\frac{5}{8}$ in. wide.
D. 3 $\times 3$ " $\frac{3}{4}$ "

Shifting Rail Socket.

No. 116. FOR  SHIFTING TOPS.

Shifting Rail Iron.

No. 117. 



No. 118. New Pattern.
FOR SLIDING SEATS IN CARRIAGES.

MALLEABLE IRONS.

Seat Iron.

No. A. 4¼ in. long. ½ in. hole.

Can be used for square box or light lumber wagons.

Hold Backs.

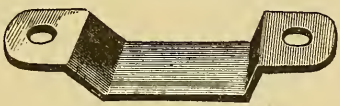
No. B. 4¼ in. long.

No. C. 5¾ in. long, 3¼ in. to bend.

No. D. 6 in. long, 3½ in. to bend.

No. E. 5½ in. long.

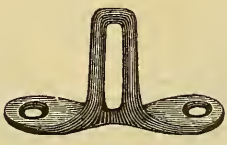
No. F. 5½ in. long.



No. G. 2⅝ in. long.

Breeching Loops.

No. H.	2¾ in. long	for 1 in. Strap.
I.	2½ "	" 1⅛ "
J.	3¼ "	" 1⅛ "



Breeching Hooks.

No. K. 2½ in. long.

No. L. 3 in. long.

MALLEABLE IRONS.

Safety Loops for Shafts.

Two sizes of these patterns are made.

Measure inside the Loop.

No. 119. ⅞ in. Loop.
120. 1 "

No. 121. ⅞ in. Loop.
122. 1 "

Body Loops.

Measure inside the Loop.

Sizes,	⅞	1	1⅛	1¼	1½ in. Loop.
Nos.	123	124	125	126	127

Sizes,	1	1⅛	1¼	1½ in. Loop.
Nos.	124½	125½	126½	127½

Double Check or Perch Loops.

Measure inside the Loop.

Sizes,	⅞	1	1¼	1½ in. Loop.
Nos.	128	129	130	131

Sizes,	1	1⅛	1¼	1½ in. Loop.
Nos.	128½	129½	130½	131½

Check and Footman Loops.

Check Loops.

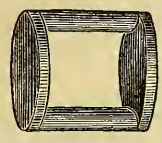
Sizes,	⅞	1	1¼	1½	1¾ in.
Nos.	132	133	134	135	136

Footman Loops.

Sizes,	⅞	1⅜ in.
Nos.	137	138

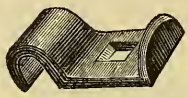
MALLEABLE IRONS.

Spring Shackles and Spring Holders.



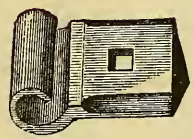
Spring Shackle.

For 1¼ 1½ 1¾ 2 in. Springs.
Nos. 139 140 141 141¼



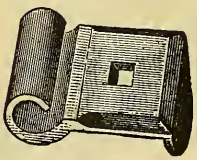
Light Shackle Holder.

For 1¼ 1½ 1¾ 2 in. Shackle.
Nos. 142 143 144 144¼



Medium Shackle Holder.

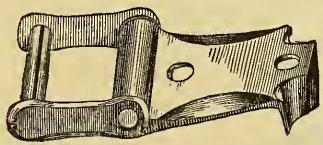
Sizes, 1¼ 1½ 1¾ 2 in. Shackle.
Nos. 139½ 140½ 141½ 141¾



Heavy Shackle Holder.

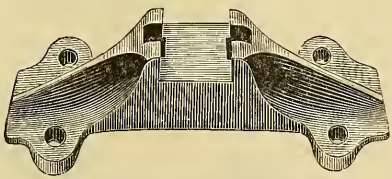
Sizes, 1¼ 1½ 1¾ 2 in. Shackle.
Nos. 142½ 143½ 144½ 144¾

Spring Shackle and Holder Combined.



Sizes, 1 1¼ 1½ in.
Nos. A B C
Made only to order.

Spring and Axle Block.



Sizes, ⅞ 1 1⅛ 1¼ 1⅜ in.
Nos. D E F G H

MALLEABLE IRONS.

Axle Clip Yokes.

Light.

Sizes,	⅞	1	1⅛	1¼	1⅜	1½ in.
Nos.	145	146	147	148	149	150

Heavy.

Sizes,	1	1⅛	1¼	1⅜	1½ in.
Nos.	151	152	153	154	155

Plain Pattern.

Sizes,	⅞	1	1⅛	1¼	1⅜	1½ in.
Nos.	156	157	158	159	160	161

For Swedged Axles.

Sizes,	⅞	1	1⅛	1¼	1⅜	1½ in.
Nos.	162	163	164	165	166	167

Extra Heavy, 1½ and 1¾ in.
Nos. 168 169

Axle Yoke with Loop.

Sizes,	1	1⅛	1¼ in.
Nos.	170	171	172

Axle Yoke and Shaft Coupling Combined.

Sizes,	1	1⅛	1¼ in.
Nos.	173	174	175

Wagon Hammer Straps.

Lengths,	7½	8	10½ in.
Nos.	176	177	178

MALLEABLE IRONS.

Spring Saddle Clip Plates.

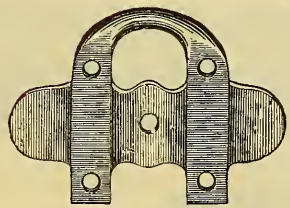
Top Plate for Saddle Clip.

Sizes,	1¼	1⅜	1½	1¾ . in.
Nos	179	180	181	182.

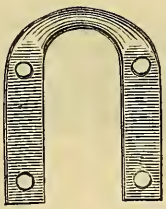
Top Plate for Saddle Clip.

No. 183....Size, 1¼ in. No. 184....Size, 1⅜ in. No. 185....Size, 1½ in.

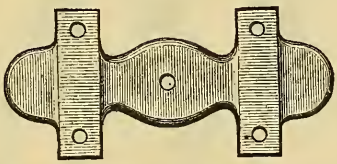
Spring Ties, with Loop



No. 186.....Size, 1½ in.

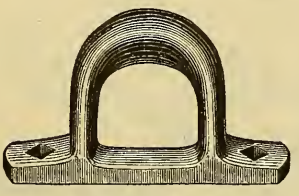


No. 187.....Size, 1¾ in.



No. 188....Size, 1½ in. No. 189....Size, 1¾ in. No. 190....Size, 2 in.
Length between holes, 4 in.

Hinman's Patent Whiffletree Staple.

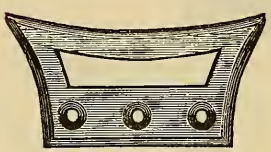


No. 191.

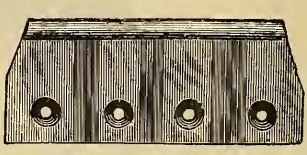
Above appliance is intended to be fastened by bolts to the center or back of heavy Whiffletrees.

MALLEABLE IRONS.

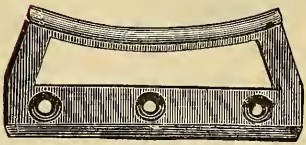
Wear or Rub Irons.



No. 192, 5 in. long.

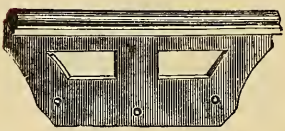


No. 193, 6½ in. long.

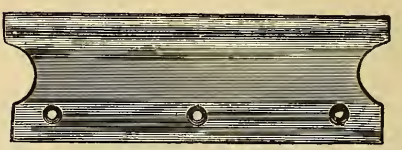


No. 194, 6 in. long.

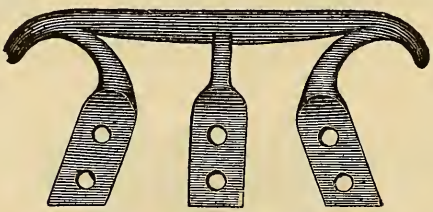
No. 195, 6½ in. long.



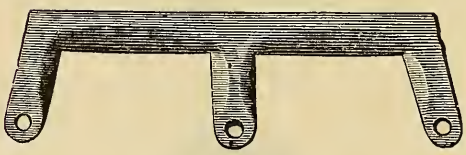
No. 196, 5½ in. long.



No. 197, 6½ in. long.



No. 198, 6¾ in. long.



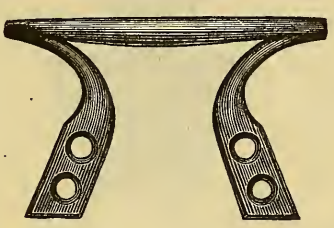
No. 199, 6½ in. long.

No. 200, 6¾ in. long.

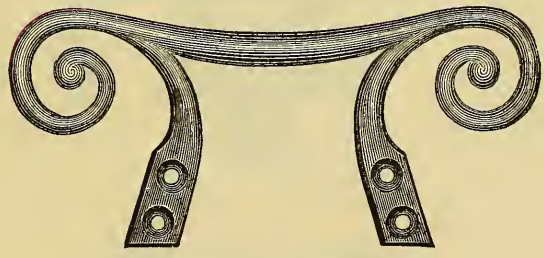
No. 201, 8 in. long. For Lumber Wagons.

MALLEABLE IRONS.

Wear or Rub Irons.

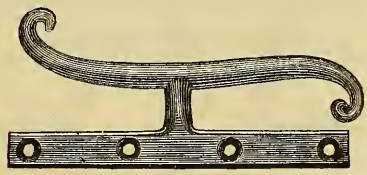


No. 202. 6 in. long.



No. 203. 8½ in. long.

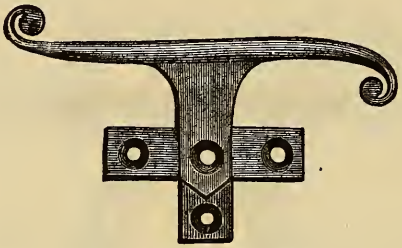
No. 204. 6¾ in. long.



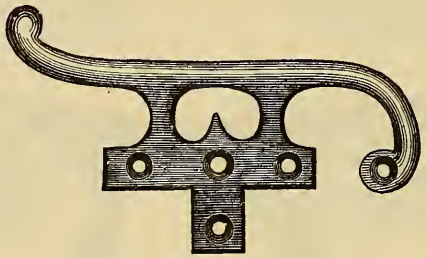
No. 205. 5 in. long.

MALLEABLE IRONS.

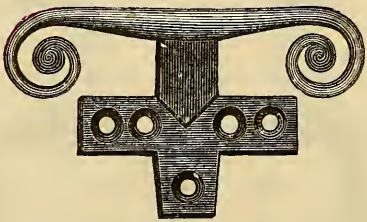
Wear or Rub Irons.



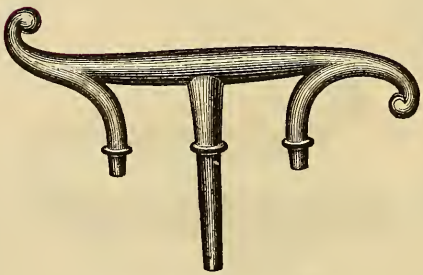
No. 206. 6¼ in. long.



No. 207. 7 in. long.



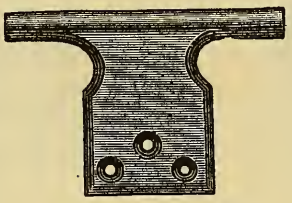
No. 208. 6 in. long.



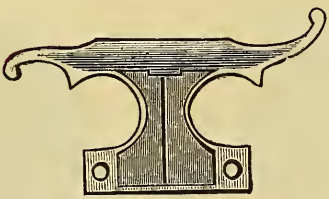
No. 209. 6¾ in. long.

MALLEABLE IRONS.

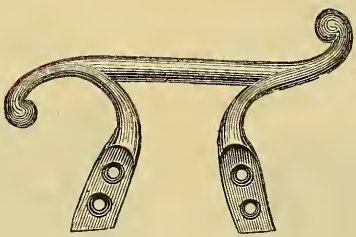
Wear or Rub Irons.



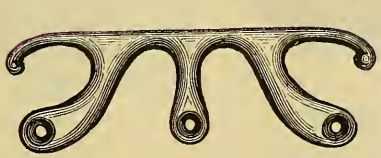
No. 206½. 4½ in. long.



No. 207½. 6¼ in. long.



No. 208½. 7 in. long.

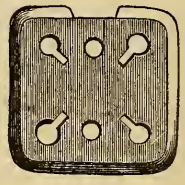


No. 209½. 7¼ in. long.

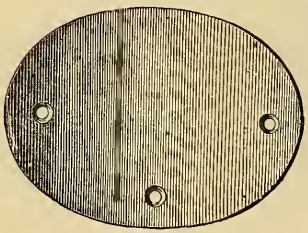
MALLEABLE IRONS.

Carriage Steps.

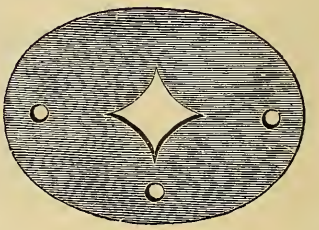
No. 210. 3¾ in. diameter.
211. 4 "



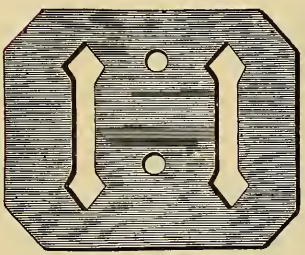
No. 212. 3⅜ in. by 3⅜ in.
213. 3 " 3⅝
214. 4 " 4½



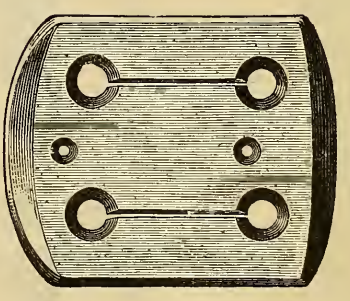
No. 215. Slightly Curved.
Size, 3½ in. wide, 4½ in. long.



No. 216. Slightly Curved.
Size, 3½ in. wide, 4½ in. long.



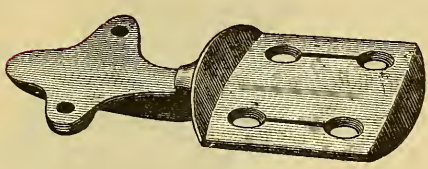
No. 217. 3⅜ in. by 3¾ in.
218. 3¾ " 4½
219. 4 " 5¼



No. 220. 3¼ in. by 4¼ in.
221. 3¾ " 4¾

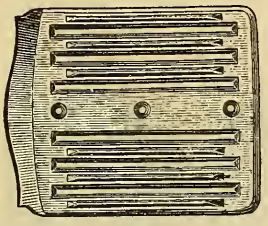
MALLEABLE IRONS.

Carriage Steps.



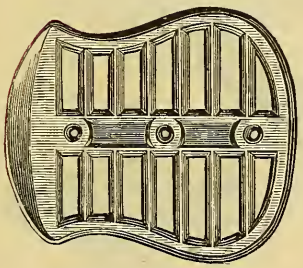
Ball Pattern.

No. 222. 3¼ in. wide, 7¼ in. long.



Ribbed Pattern.

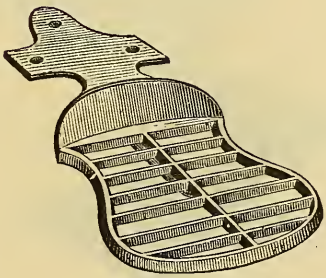
No. 223. 3 × 3¾ in.



Cross Bar Pattern.

No. 224. 3⅜ × 4⅛ in.

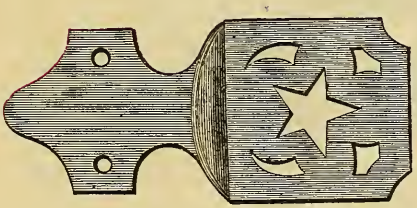
225. 4¼ × 4⅞



Cross Bar Pattern.

Drops 1 inch.

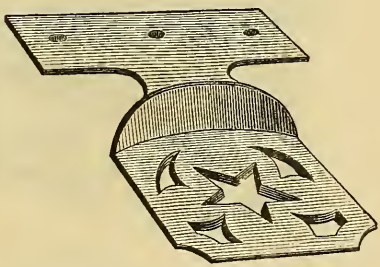
No. 226. 4¼ in. wide, 8½ in. long.



Star Pattern.

Drops 1 inch.

No. 227. 3¾ in. wide, 8 in. long.



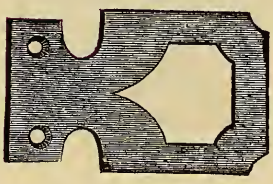
New Star Pattern.

Drops 1¼ inch.

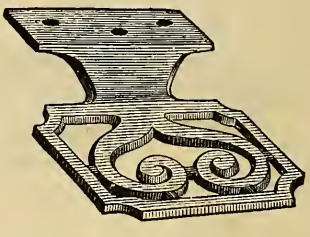
No. 228. 3¾ in. wide, 7¼ in. long.

MALLEABLE IRONS.

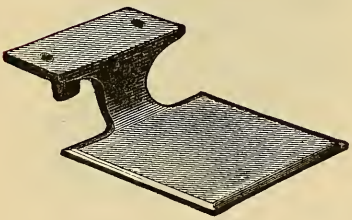
Carriage Steps.



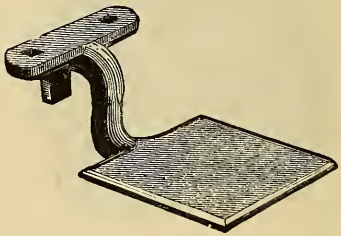
No. 229. 3⅛ in. wide, 6⅞ in. long.



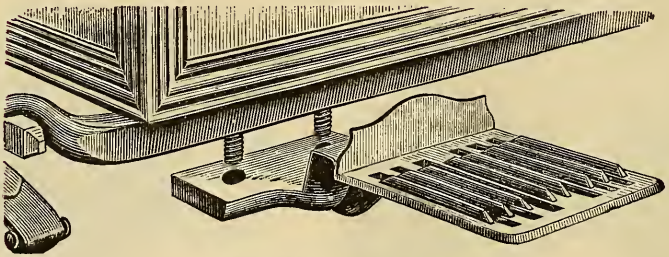
No. 230. 4 in. wide, 5½ in. long. Drops 1 in.



No. 231. Plain Square. Drop Step.



No. 232. Plain Square. Drop Step.



No. 233. 3¾ × 3 in., 6 in. long.

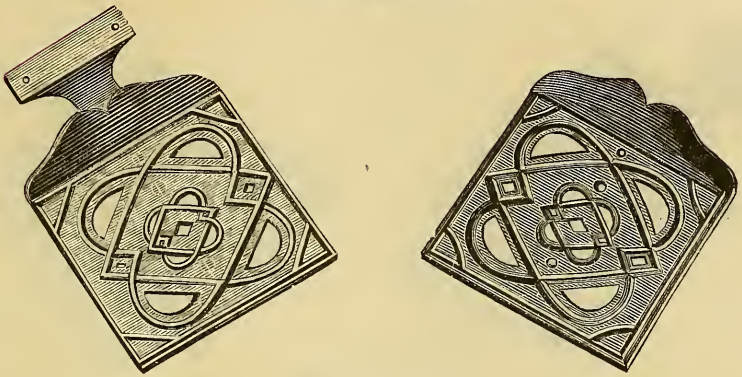
Designed to be attached to the body by the same bolts that fasten the body loops, as illustrated in the cut, and will fit any size of Body Loop.

MALLEABLE IRONS.

Carriage Steps and Pads.

DESIGNED BY D. A. KIMBARK.

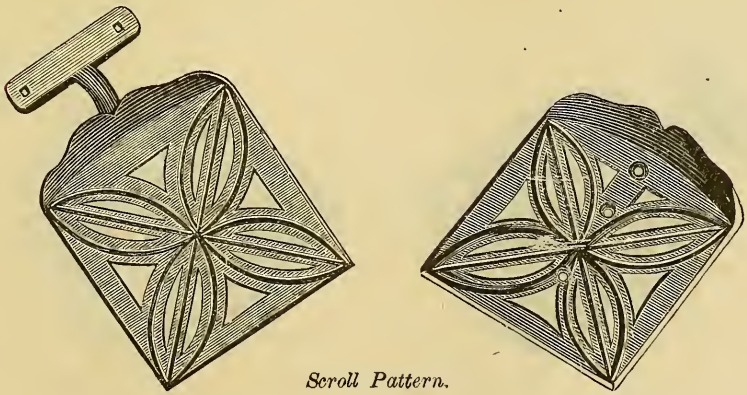
PATENT APPLIED FOR.



Double Heart Pattern.

No. A. Pad 3⅓ × 4 in. Whole Length 8 in., with Deep Drop.

No. B. 3¼ × 3¾ in. Pad.
C. 3½ × 4 "



Scroll Pattern.

No. D. Pad 3½ × 4 in. Whole Length 8 in., with Deep Drop.

No. E. 3¼ × 3¾ in. Pad.
F. 3½ × 4 "

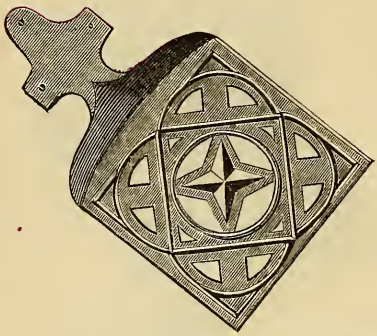
The above were designed for the purpose of doing away with many objections usually made to Malleable Iron Steps. The ribs are all brought up to a sharp angle above the flat or surface of the Pad, to prevent the slipping of the foot, with open work to allow water and dirt to pass through, and to take the place of high priced Wrought Iron Steps.

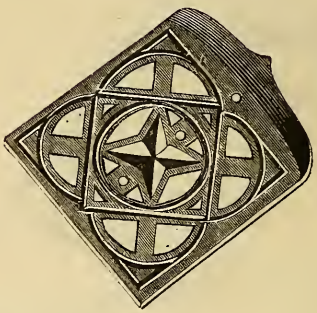
MALLEABLE IRONS.

Carriage Steps and Pads.

DESIGNED BY D. A. KIMBARK.

PATENT APPLIED FOR.

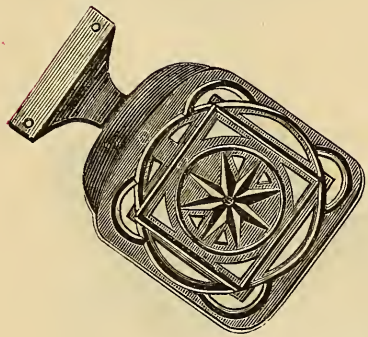




Open Star Pattern.

No. G. Pad 3½ × 4 in.
Whole Length 8 in., with Deep Drop.

No. H. 3¼ × 3¾ in. Pad.
I. 3½ × 4 "



Granger Pattern.

No. J. Pad 3½ × 4 in.
Whole Length 8 in., with Deep Drop.

No. K. 3¼ × 3¼ in. Pad.
L. 3½ × 4 "

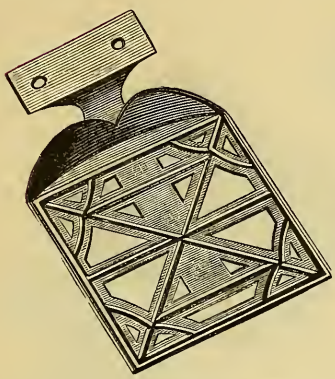
All of above designs have the ribs brought up to a sharp angle, to prevent the slipping of the foot, with open work to allow the water and dirt to pass through. They will undoubtedly take the place of the Wrought Iron Step, being cheaper, light and strong, and easily attached to any style of Carriage or Wagon.

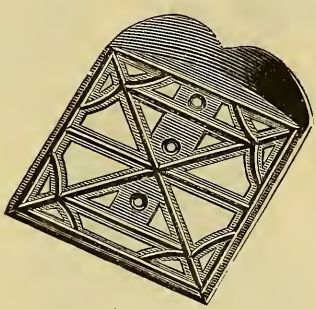
MALLEABLE IRONS.

Carriage Steps and Pads.

DESIGNED BY D. A. KIMBARK.

PATENT APPLIED FOR.

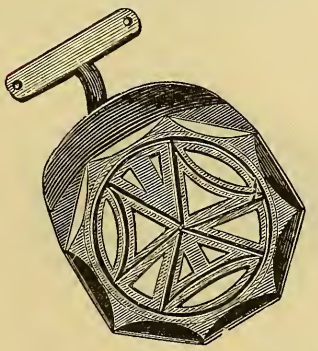




Angular Cross Bar Pattern.

No. M. Pad 3½ × 4 in.
Whole Length 8 in., with Deep Drop.

No. N. 3¼ × 3¾ in. Pad
O. 3½ × 4 "



Octagon Pattern.

No. P. Pad 4 in.
Whole Length 8 in., with Deep Drop.

No. Q. 3¼ in. Pad.
R. 4 "

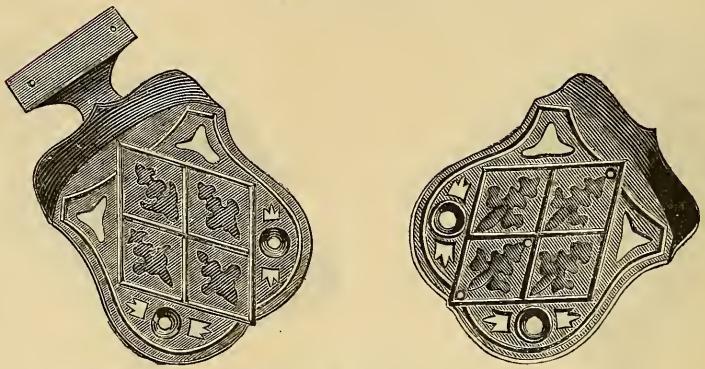
Above patterns have the ribs brought up to a sharp angle to prevent the slipping of the foot, with open work to allow the water and dirt to pass through. The Octagon Pattern with a long stem, made to fit right and left, is a very desirable style for Concord Buggies, and will take the place of the plain Octagon and Round patterns so much used for this purpose.

MALLEABLE IRONS.

Carriage Steps and Pads.

DESIGNED BY D. A. KIMBARK.

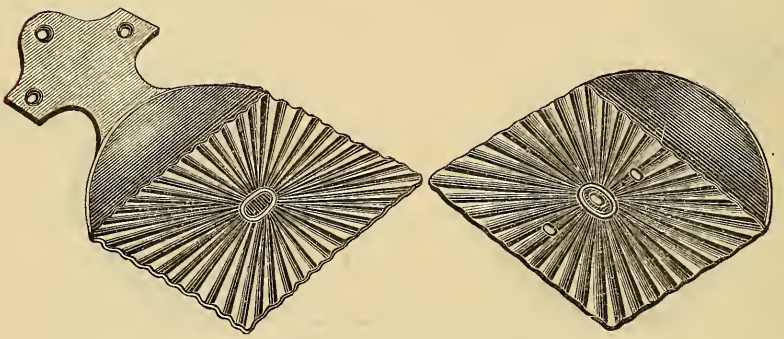
PATENT APPLIED FOR.



Raised Flower Pattern.

No. S. Pad 3½ × 4 in. Whole length 8 in., with Deep Drop.

No. T. 3¼ × 3¾ in. Pad.
U. 3½ × 4 "



Combination Ribbed Pattern.

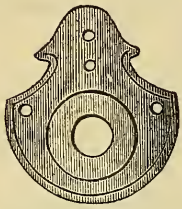
No. V. Pad 3½ × 4 in. Whole length, 8 in., with Deep Drop.

No. W. 3¼ × 3¾ in. Pad.
Y. 3½ × 4 "

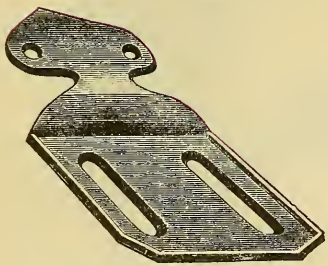
The above Patterns have the ribs brought up to a sharp angle, to prevent the foot from slipping, and are quite desirable styles.

MALLEABLE IRONS.

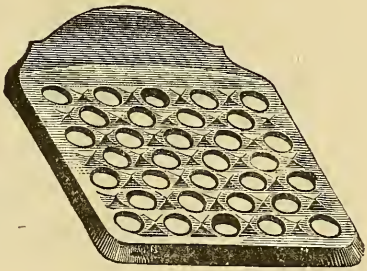
Carriage Steps.



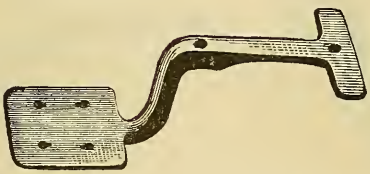
No. 234½. 4½ in. wide, 5½ in. long, Light.
235½. 4½ " 5½ " Heavy.



No. 236½. 3¾ in. wide, 6 in. long.
Drops 1 in.



No. 237½. 4 in. wide, 4½ in. long.
With raised points on the surface.



No. 237¾. 3½ × 4 in. Square Pad.
238½. 4 × 4 " "
Drops 3½ in.

No. 238¾. 4¼ in. Octagon Pad.
Drops 3½ in., about 16 in. long.

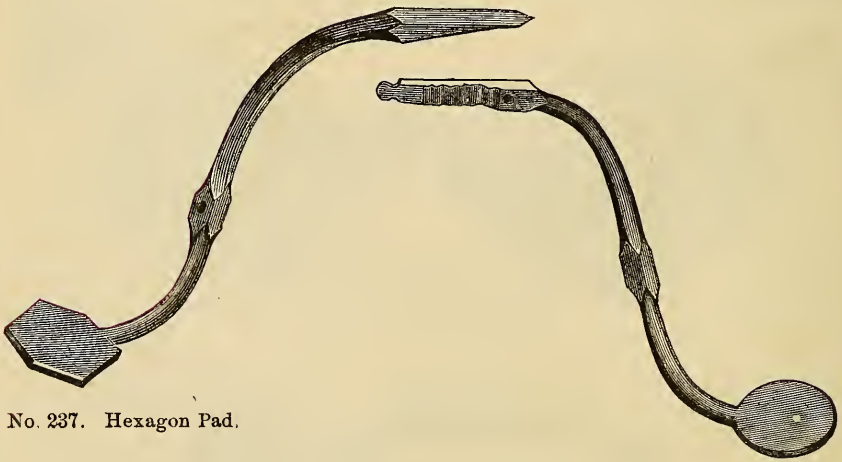
MALLEABLE IRONS.

Carriage Steps.

No. 234. Drops 3¼ in., 17 in. long, Pad 4¼ in. Round.

No. 235. Round Pad, 4 in., 18½ in. long.

No. 236. Hexagon Pad. 18 in. long.



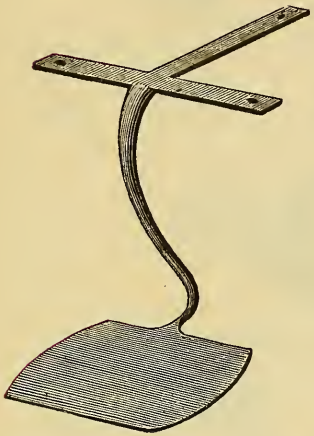
No. 237. Hexagon Pad.

No. 238. Round Pad.

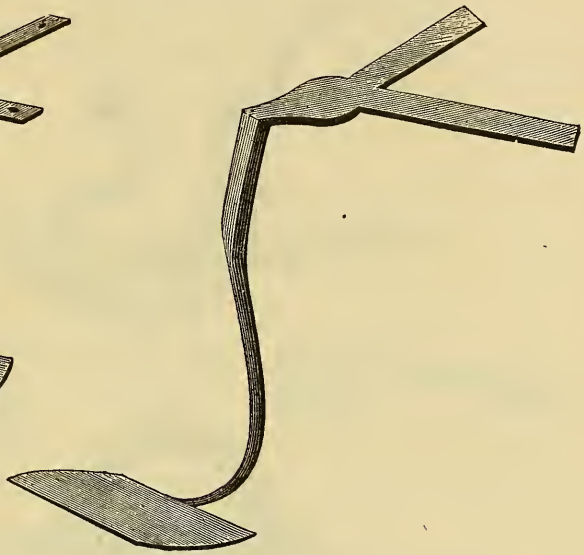
Both styles drop 9½ in. Right and Left.

MALLEABLE IRONS.

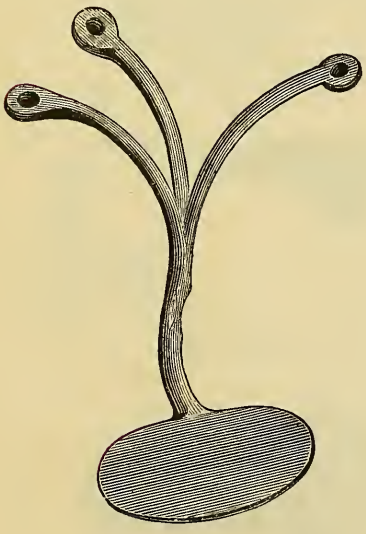
Carriage Steps.



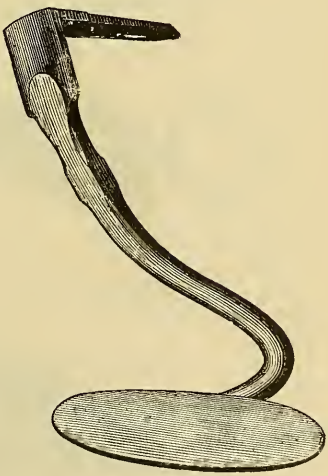
No. 239.
Drops 5½ in.
Right and Left.



No. 240. Drops 9 in.



No. 241. Drops 7 in.



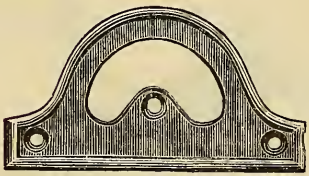
No. 242. Drops 10½ in.

No. 242. Right and Left, and used on Express Shafts.

MALLEABLE IRONS.

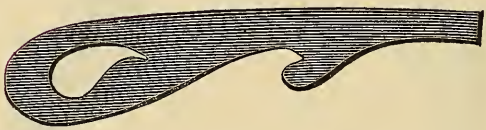
Sleigh Steps.

No. 239½. 5½ in. wide, 11¼ in. extreme length.



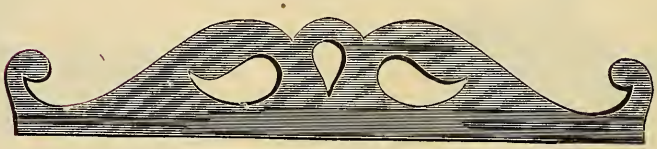
Single Sleigh Step Plate.

No. 240½. 2⅞ in. wide, 5¼ in. extreme length.



Double Sleigh Step.

No. 241½. Used on front of rave or driver's step.



Double Sleigh Step.

No. 242½. Used on rear of rave or passenger step.

MALLEABLE IRONS.

Thumb Nuts.

No. 243. Size, $\frac{3}{16} \times \frac{3}{16}$ in.
244. " $\frac{3}{16} \times \frac{1}{4}$
245. " $\frac{3}{16} \times \frac{7}{16}$
246. " $\frac{5}{16} \times \frac{7}{16}$

No. 247. Size, $\frac{5}{16} \times \frac{1}{2}$ in.
248. " $\frac{5}{16} \times \frac{9}{16}$
249. " $\frac{3}{8} \times \frac{1}{2}$
250. " $\frac{7}{16} \times \frac{13}{16}$

No. 251. Size, $\frac{5}{16} \times \frac{3}{16}$ in.
252. " $\frac{3}{8} \times \frac{1}{4}$

Wagon Brake Ratchet.

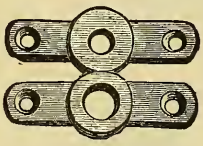
No. 253. 17 in. long.

End Board Nuts.

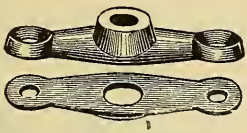
No. 254. For $\frac{3}{8}$ in. Rod.

No. 255. For $\frac{3}{8}$ in. Rod.

Box Rod Washers.



No. 256. $\frac{5}{16}$ in. Round Ends.
257. $\frac{3}{8}$ " "



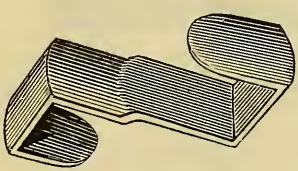
No. 258. $\frac{3}{8}$ in. Rod.

D Stake Rings.

No. 259. $1\frac{3}{8} \times 1\frac{5}{8}$ in.
260. $1\frac{5}{8} \times 2$

No. 261. $\frac{7}{8} \times 1\frac{9}{16}$ in.
262. $\frac{7}{8} \times 1\frac{3}{4}$
263. $1 \times 1\frac{5}{8}$
264. 1×2

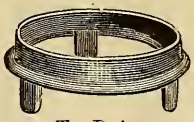
Seat Spring Hook.



No. 265. $3\frac{1}{2}$ in. short, $4\frac{1}{2}$ in. long.

MALLEABLE IRONS.

Sand Bands.

Measure inside  *of Small End.*

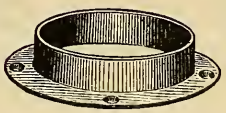
To Drive.

No. 266.	2½	in. diameter.
267.	2¾	"
268.	3	"
269.	3¼	"
270.	3½	"
271.	3¾	"
272.	4	"
273.	4¼	"

Measure inside *of Small End.*

To Screw.

No. 274.	2¼	in. diameter.
275.	2½	"
276.	2¾	"
277.	3	"
278.	3¼	"
279.	3½	"
280.	3¾	"
281.	4	"

Measure inside  *of Small End.*

To Screw.

No. 282.	2½	in. diameter.
283.	2¾	"
284.	3	"
285.	3¼	"
286.	3½	"
287.	3¾	"
288.	4	"

Measure inside *of Small End.*

To Drive.

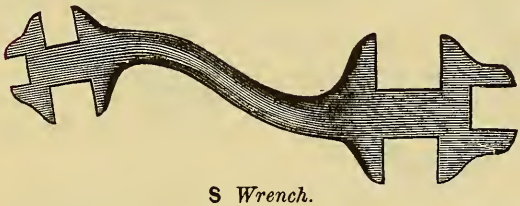
No. 284½.	2	in. diameter.
285½.	2¼	"
286½.	2½	"
287½.	2¾	"
288½.	3	"

MALLEABLE IRONS.

Wrenches.

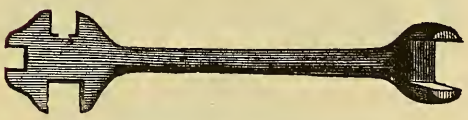
Deep—New Pattern.

Sizes,	⅞	1	1⅛	1¼ in.
Nos.	289	290	291	292



S *Wrench.*

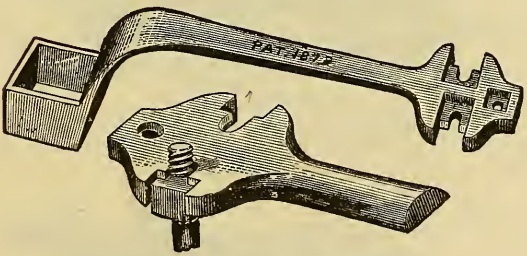
No. 293. 12½ in. long.
294. 8¾ "



Deep-lipped Wrench for Patent Wheels.

	⅞	1	1⅛	1¼ in. Axles.
Nos.	295	296	297	298

Sizes,	1	1⅛	1¼	1⅜	1½	1¾	2	2⅛ in.	3 jaws.
Nos.	299	300	301	302	303	304	305	306	



Cooper's Common Sense Wrench.

Sizes,	⅞	1	1⅛	1¼	1⅜ in.
Nos.	307	308	309	310	311

See page 185 for Price List.

MALLEABLE IRONS.

Wrenches.

Adjustable Wrench.

See page 186, for Price List.

No. 312. 10½ in. long, not fitted up.
313. 15 " " "
314. 10½ " fitted ready for use.
315 15 " " " "

No. 316. 1¼ in. Hole, 5 Jaws.

No. 317. 1½ and 2 in. Square Holes.

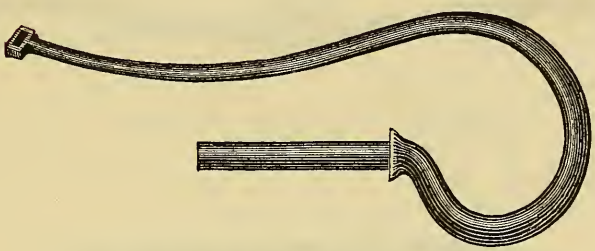
Claw and Hammer.

No. 318. 4 Jaws, 8¾ in. long.

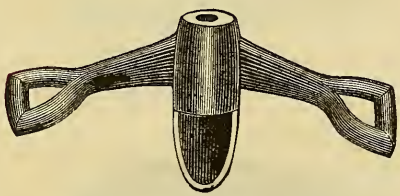
No. 319. 12 in. long.

MALLEABLE IRONS.

Pole Yokes and Sockets.



No. 320. Hook to be used with No. 321.



No. 321. 1½ in. diameter, 10 in. long.

322. Same pattern, Solid End.

No. 323. 1¼ in. Loop, 20 in. long.

No. 324. Socket to be used with No. 323.

MALLEABLE IRONS.

Pole Yoke and Socket.

No. 325. 1½ in. Loop. 18 in. long.
326. 1⅝ " 21 "

No. 327. 1¼ in. diameter. 12 in. long.

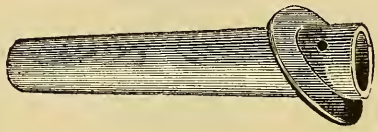
Pole Crabs.

No. 328. 1⅜ in. Loop. 12 in. long.

No. 329. 1½ in. Loop. 1 in. Hole.
330. 1⅝ " 1⅛ "
331. 1¾ 1¼ "

MALLEABLE IRONS.

Pole Sockets.



Ordinary Pattern.

No. 332. 1⅛ in. Hole, 6 in. long.
333. 1¼ " 6 "
334. 1⅜ " 6 "
335. 1½ " 6 "

Extra Long Pattern.

No. 332½. 1¼ in. Hole, 7 in. long.
333½. 1⅜ " 7
334½. 1½ " 7
335½. 1⅝ " 7

No. 335¾. 1¾ in. Hole, 7 in. long.

The extra long Sockets are California Patterns.

No. 336. 1½ in. Hole, 9 in. whole length.

No. 337. 1¼ in. Hole, 7¾ in. whole length.

No. 338. 1¼ in. Hole, 6 in. whole length.

Neck Yoke Socket.

Sizes,	¾	⅞	1	1⅛	1¼	1⅜	1½ in. Hole.
Nos.	338½	339	340	341	341¼	341½	341¾

MALLEABLE IRONS.

Shaft Tips.

FOR BUGGIES.

No. 342.	¾	in. Hole,	1½	in. long.
342½.	⅞	"	1⅝	"
343.	1	"	1¾	"
343½.	1⅛	"	1¾	"
344.	1¼	"	1⅞	"

FOR CARTS.

No. 344½.	1⅛	in. small end,	2½	in. long.
345.	1¼	" "	2⅝	"

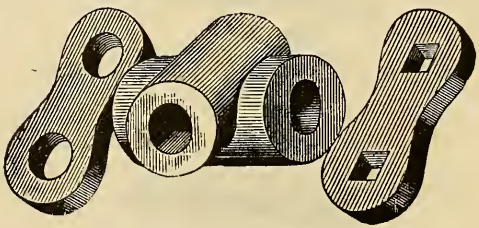
Perch Plates.

No. 345½.	5	in. long,	2⅞	in. to center of Holes.
346.	6	"	3⅝	" "
347.	7	"	4¾	end turned.

No. 348. 3¼ in. long, 2⅝ in. to center of Holes.

No. 349. 5 in. long, 3 in. to center of Holes.

Double Spring Barrels and Plates.



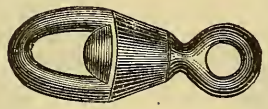
Sizes,	1¼	1¼ × 1½	1½	1¾	2	2¼	2½ in.
Nos.	350	351 352	353	354	355	356	356½

MALLEABLE IRONS.

CHAIN AND LARIAT SWIVELS, 4 CENTS PER POUND EXTRA.

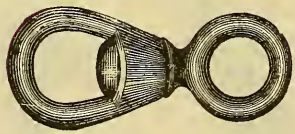
Chain *Swivels.*

No. 356¾. ½ in. Hole, 1½ in. loop.



No. 357.	⅜	in. Hole,	⅝	in. loop.
358.	7/16	"	¾	"
358½.	7/16	"	1	"
359.	⅝	"	1⅛	"
359½.	⅝	"	1¾	"

Lariat Swivel.



No. 359¾ has ½ in. Eye. No. 360 has ¾ in. Eye. No. 360½ has 1 in. Eye.

Fork Ferrules.

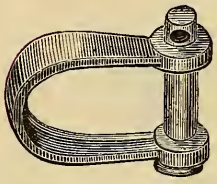
No. 361. Hay. No. 362. Manure.

Melting Ladles.

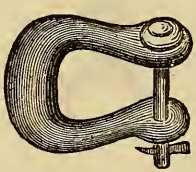
No. 363.	3¾	in. Bowl,	14½	in. Handle	$3 50	per dozen.
364.	4¾	"	17	"	5 00	"
365.	6	"	18	"	5 50	"
365½.	8	"	20	"	10 00	"

MALLEABLE IRONS.

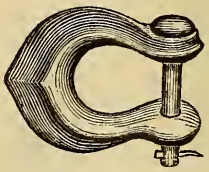
Clevises.



No. 366. 1⅝ in. inside.

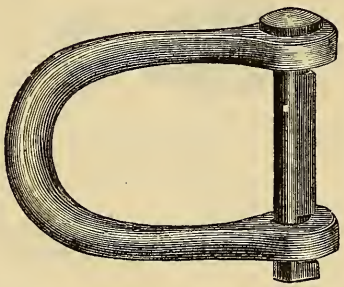


No. 367. ¾ in. inside.



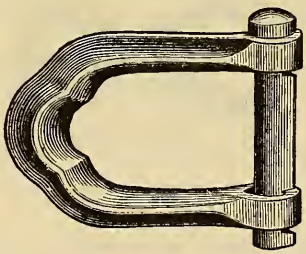
No. 368. ¾ in. inside.

Shovel

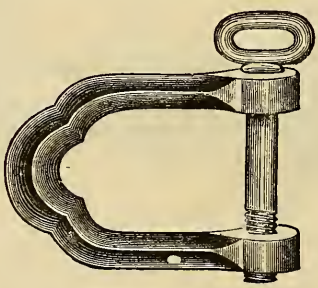


Plow.

No. 369. 2⅞ in. Beam. 5¼ in. extreme length.

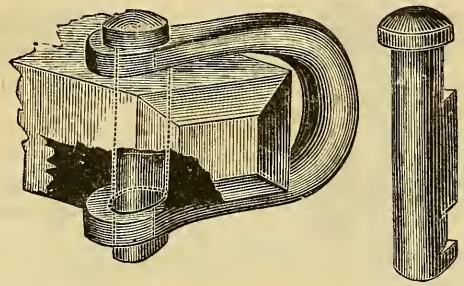


No. 370. Self-Adjusting Pin. 2 in. inside. 4½ in. extreme length.

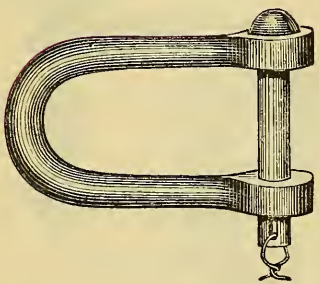


No. 370½. Pin with Screw. 2 in. inside. 4½ in. extreme length.

MALLEABLE IRONS.

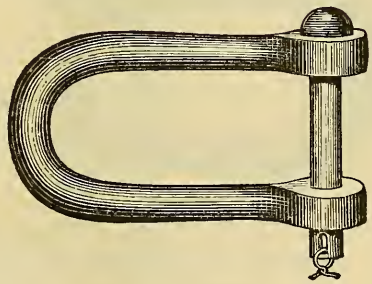


No. 371. Self-Adjusting Pin. 2 in. inside. 4½ in. extreme length.



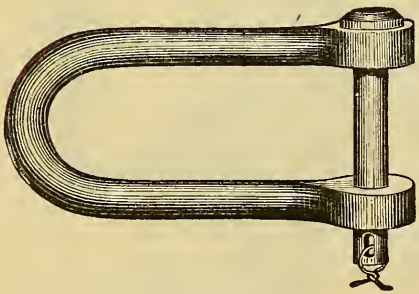
No. A. Round Pin.

1¾ in. inside, 5 in. extreme length.



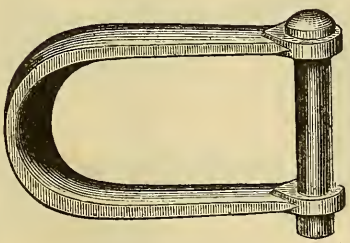
No. B. Round Pin.

1¾ in. inside, 5½ in. extreme length.



No. C. Round Pin.

1⅜ in. inside, 6¼ in. extreme length.

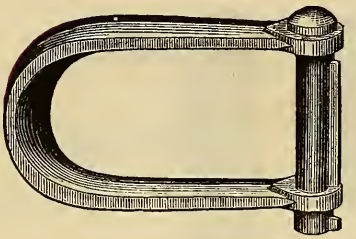


No. D. Round Pin.

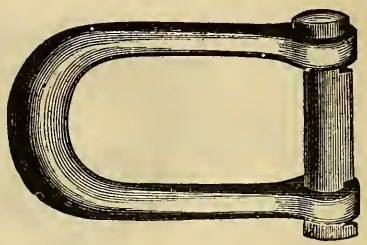
2 in. inside, 4½ in. extreme length.

MALLEABLE IRONS.

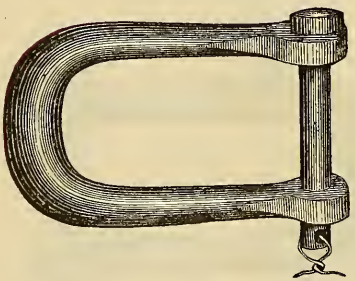
Clevises.



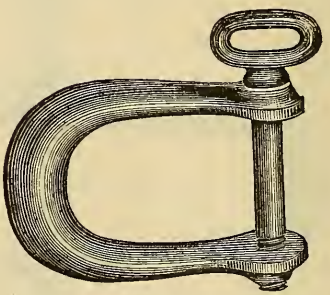
No. 372. 2 in. inside.
4½ in. extreme length.



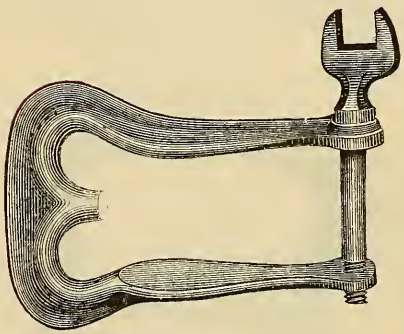
No. 373. 1¾ in. inside.
374. 2 "
5¼ in. extreme length.



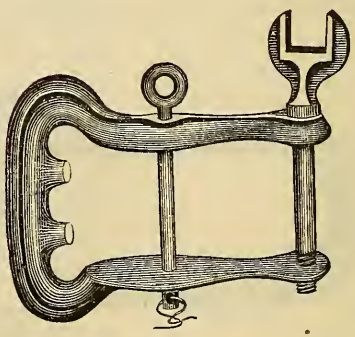
No. 375. Straight Pin.
2 in. inside, 5¼ in. extreme length.



No. 376. Pin with Screw.
2 in. inside, 4½ in. extreme length.



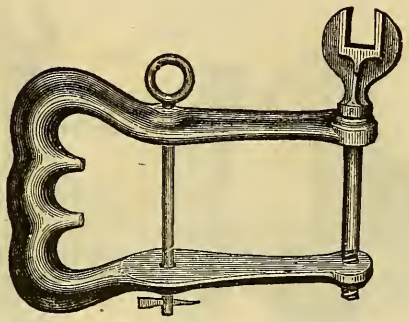
Cultivator Clevis.
No. 377. 2 in. Beam.
378. 2¼ "
379. 2½ "



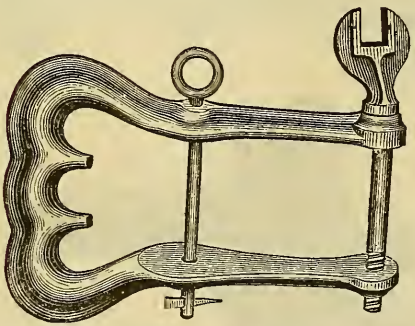
Corn Plow.
No. 380. 2 in. Beam.
381 2¼ "
5¾ in. extreme length.

MALLEABLE IRONS.

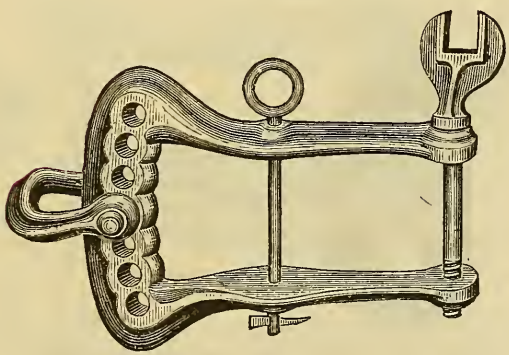
Clevises.



No. 382. 2⅛ in. Beam. Thread cut on Wrench Pin.
383. 2¼ " " " "
384. 2½ " " "



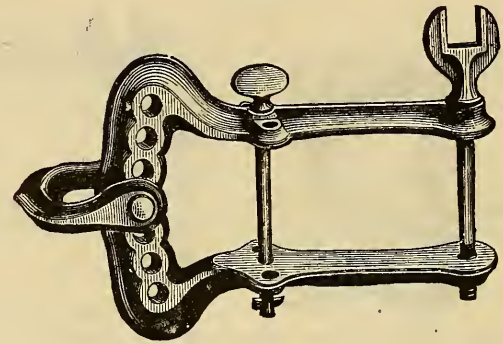
No. 385. 2¾ in. Beam. Thread cut on Wrench Pin.
386. 3 " " " "



No. 387. 2½ in. Beam. Thread cut on Wrench Pin.
388. 2¾ " " " "
389. 3 " " " "

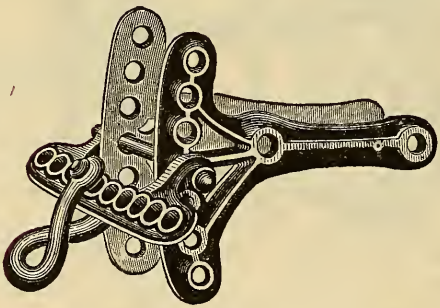
MALLEABLE IRONS.

Clevises.

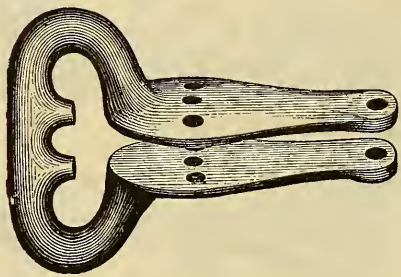


Half Scotch.

No. 390. 2½ in. Beam. Thread cut on Wrench Pin.
391. 2¾ " " " "
392. 3 " " " "



No. 393. 3 in. Beam. Three-Horse Wood Beam Breaker.

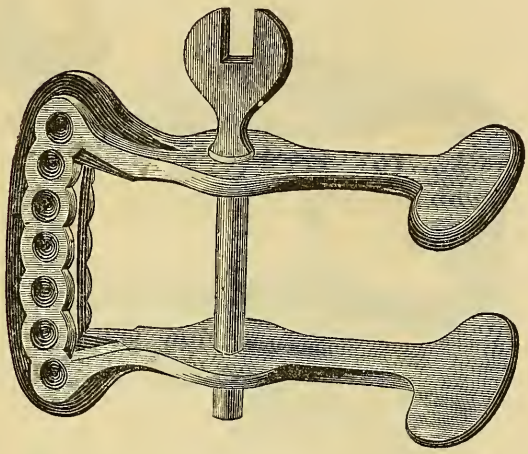


No. 394. ¾ in. inside. 6¾ in. extreme length.
395. ⅞ " 6¾ " "

For Iron Beam Plows with Holes for Guide Pin.

MALLEABLE IRONS.

Clevises.

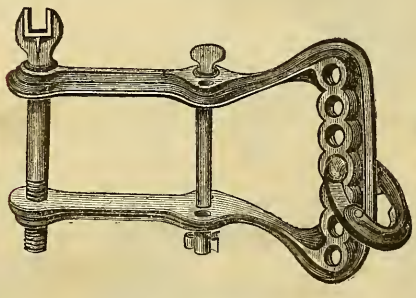


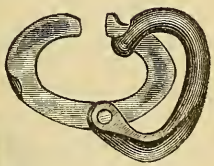
Full Scotch.

No. 390½. 2½ in. Beam.
391½. 2¾ "
392½. 3 " for breakers.

Ingalls' Universal Clevis and Link.

Clevis Link Closed.





Clevis Link Open.

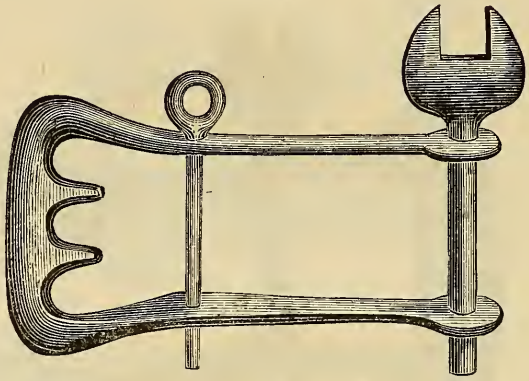
No. 393½.

This Clevis, having two extra ribs, contains three and one-quarter inches more surface, and weighs six to ten ounces less, than any other, while it is very much stronger.

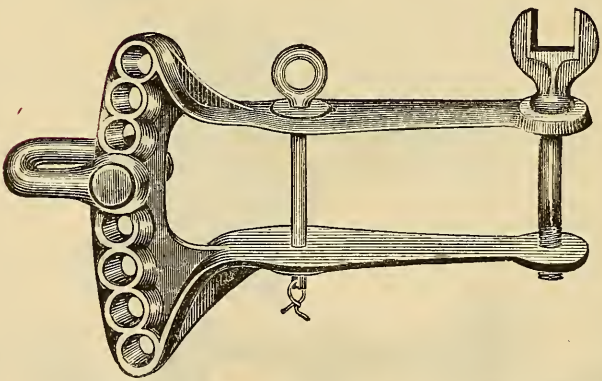
The Link contains no pins or keys to lose, and is more conveniently adjusted.

MALLEABLE IRONS.

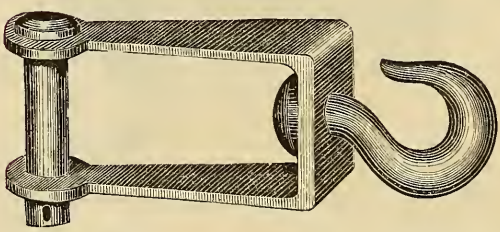
Clevises.



No. 394½. 2½ in. Beam.
394¾. 2¾ "



No. 395½. For 2¾ in. Beam, 9½ in. extreme length.

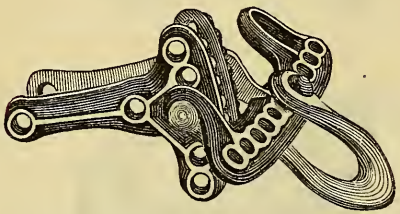


No. 395¾. Evener Clevis and Hook. 2⅝ in. inside, 9 in. extreme length.

MALLEABLE IRONS.

Clevises.

No. 396. Two-Horse Iron Beam, complete.



No. 397. Three-Horse Iron Beam, complete.

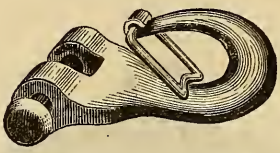
No. 398. Twist Link for Two-Horse Iron Beam.
399. " " Three-Horse "

No. 400. Cross Link for Iron Beam Clevis.
Made with 5, 6 and 7 holes.

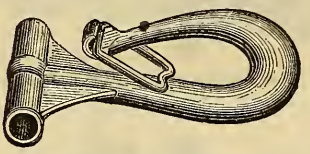
No. 401. Three-Horse Attachment for Iron Beam Plows.
Made with 9, 12 and 13 holes.

MALLEABLE IRONS.

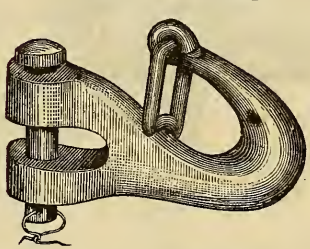
Cultivator Hooks.



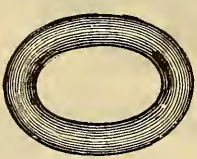
No. 402. 5 in. long. Heavy.



No. 403. 4¾ in. long.

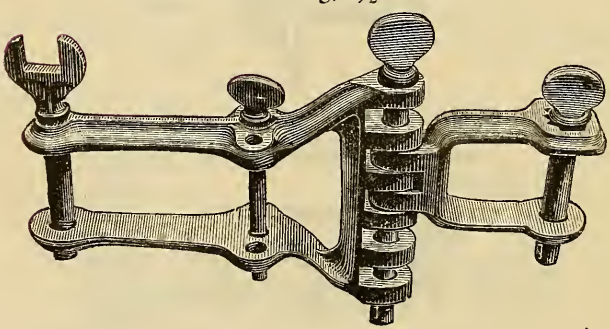


No. 404. 5 in. long.



Plow Link.

No. 405. 3 in. long, 2½ in. wide.



Patent Adjustable Clevis.

No. 406.

MALLEABLE IRONS.

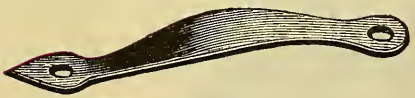
King Bolt and Bed Plate.

No. 407. ½ in. Hole, 1¼ in. wide, 6½ in. long.
408. ⅝ " 1⅜ " 7½ "

No. 407¼. 11 in. long, light, 8⅞ between End Holes.

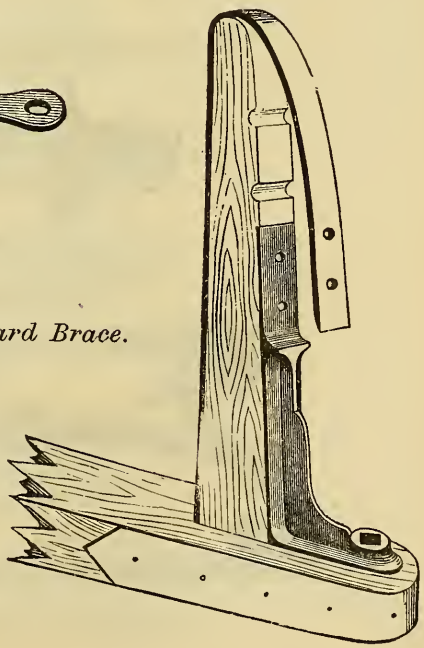
No. 407½. 12 in. long, 7½ in. to Center End Holes.
407¾. 14 " 9⅝ " "
408¼. 16 " 10½ " "

Pole Evener Braces.



No. 408½.

Wagon Standard Brace.



No. 408¾. 6⅛ in. high.

For use on two-horse wagons, as shown in cut.

MALLEABLE IRONS.

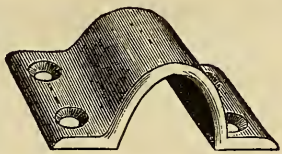
Stake or Bow Irons.

New Pattern.

For bow, ¾ in. deep, 1¼ in. wide.

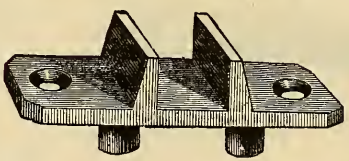
Stake Irons.

No. 409. ⅝ in. deep, 1⅛ in. wide, for Stake.
410. ¾ " 1¼ " "
411. ⅞ " 1½ " "



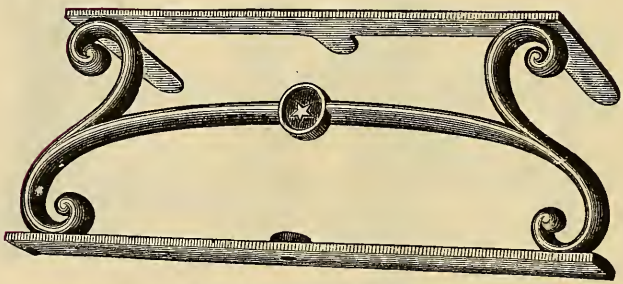
No. 412. 2½ in. deep, for 1½ in. Stake.

Stake Cleat for Wagon Box.



No. 413. 1 in. Stake, 4 in. long.

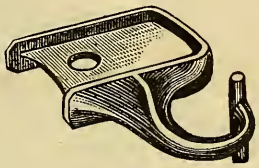
Seat Risers.



No. 414. 6 in. high, 14 in. wide.
415. 7 " 14 "

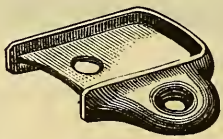
MALLEABLE IRONS.

Behel's Patent Whiffletree Hooks.



No. 416. $1\frac{1}{8}$ in. at Small End.
417. $1\frac{5}{16}$ " "
418. $1\frac{7}{16}$ " "
419. $2\frac{1}{16}$ " "

Patent Neck Yoke.



No. 420. $1\frac{5}{16}$ in. at Small End.
421. $1\frac{7}{16}$ " "

Patent Cock-eye.

No. 422. $\frac{11}{16}$ in. at Small End.
423. $\frac{7}{8}$ " "

Patent Cock-eye.

No. 424. $\frac{11}{16}$ in. at Small End.
425. $\frac{7}{8}$ " "

Patent Cock-eye.

No. 426. $\frac{11}{16}$ in. at Small End.
427. $\frac{13}{16}$ " "

Above are fitted to the Neck Yoke or Whiffletree by sawing into the end and riveted fast.

MALLEABLE IRONS.

No. 428.

Circle Posts.

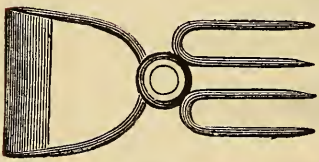
2¼ in. Center of Hole to Shoulder.
2⅜ " " "
2¼ " " "

No. 429.

Pole Iron.

No. 430. 12 in. long, and 2 in. high.

Garden Rake and Hoe.

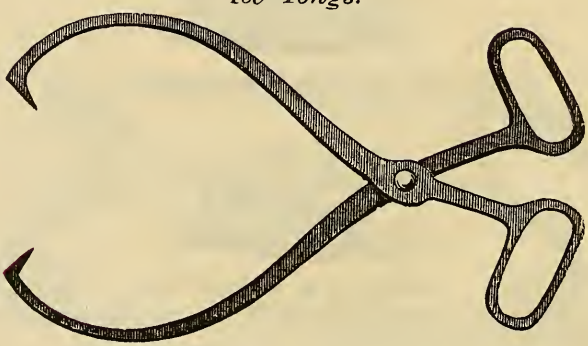


No. 431. 3 Teeth, 3 in. Blade.
432. 4 " 3½ "

Garden Rake, with Shank.

No. 433. 10 in. long.
434. 12½ "

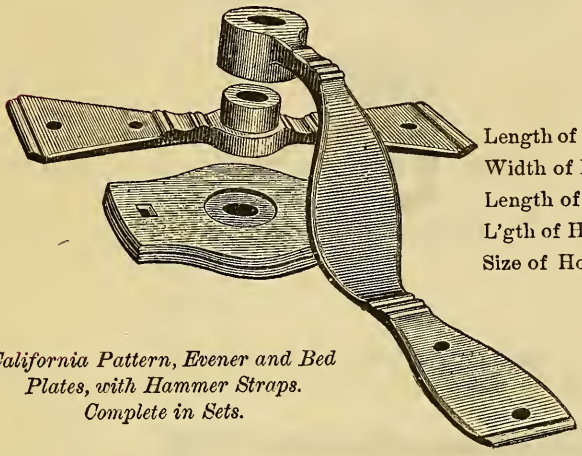
Ice Tongs.



No. 435. 16 in. long. Price, 25 cents a pair.

MALLEABLE IRONS.

No. 436. Concord Trimmings.

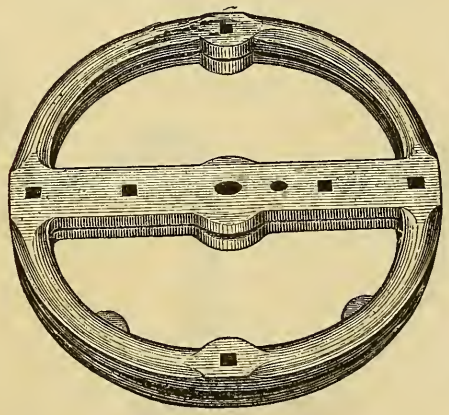


California Pattern, Evener and Bed Plates, with Hammer Straps. Complete in Sets.

Length of Evener Plates, 6½ in.
Width of Evener Plates, 3¾
Length of Top Plates, 10½
L'gth of Hammer Strap 10½
Size of Hole ..... ⅜

No. 437.	Same Pattern, medium size,	Length of Evener Plates	7⅜ in.
	" " " "	Width " "	3¾
	" " " "	Length of Top Plate	11¾
	" " " "	Length of Hammer Strap	11¾
	" " " "	Size of Hole	¾
No. 438.	Same Pattern, large size,	Length of Evener Plates	8½
	" " "	Width " "	4⅝
	" " "	Length of Top Plate	14
	" " "	Length of Hammer Strap	14
	" " "	Size of Hole	⅞

No. 439. Wagon Circle.



California Concord Pattern.

14 × 1 in. 1¾ in. bed.

No 440. Same Pattern. 14 × 1 in. 2 in. bed.

MALLEABLE IRONS.

Rein Holders.

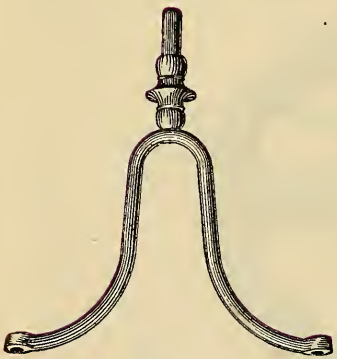
No. 441.

Twenty to the Pound.

Coach or Foot-board Handles.

No. 442. 8 in. long.
443. 10 "

Seat Rail Risers.



No. 444.

No. 445.

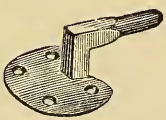
No. 444. 7 in. high.
445. 10½ "

MALLEABLE IRONS.

Axle Nuts for Iron Axles.

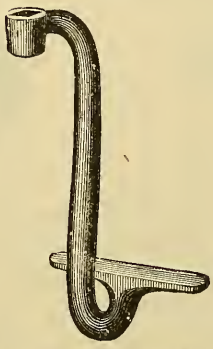
No. 441.	1⅝	in.	Flange,	⅞	in.	Nut,	$\frac{9}{16}$	in. Hole.
447.	1¾	"		$\frac{15}{16}$	"		⅝	"
448.	1⅞	"		1	"		$\frac{11}{16}$	"
449.	2⅛	"		1⅛	"		¾	"
450.	2¼	"		1¼	"		⅞	"
451.	2½	"		1⅜	"		$\frac{15}{16}$	"
452.	2¾	"		1½	"		1	"
453.	3	"		1⅝	"		1⅛	"
454.	3⅜	"		1¾	"		$1\frac{3}{16}$	"
455.	3⅝	"		2	"		$1\frac{5}{16}$	"
456.	4⅛	"		2⅛	"		$1\frac{7}{16}$	"
457.	4¼	"		2⅜	"		1⅝	"
458.	4⅝	"		2¾	"		1¾	"

Lamp Hooks.



No. 459.	Shank	1½	in.	long,	⅜	in.	square.
460.	"	1¾	"		$\frac{7}{16}$	"	
461.	"	1¾	"		½	"	

Lamp Iron.



No. 462. Length, 4¾ in.

MALLEABLE IRONS.

Wood's Patent Improved Neck Yoke Trimmings.

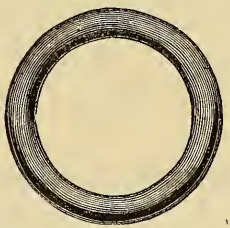
No. 463. Neck Yoke Plates.

For Top and Bottom; made concave to fit the wood.

No. 464. To Rivet.

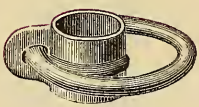
No. 465. To Screw.

Neck Yoke Pins with Eye for Ring. Size, 4¼ × ½ in. Can also be used on Evener for Stay Chains.

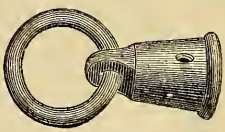


No. 466. Neck Yoke Ring.

3½ in. inside diameter. ⅝ in. Iron.



No. 467.



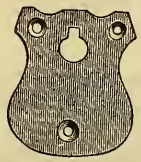
No. 468.

No. 467. Open Ferrule, with Ring for end of wood.
468. Closed-end Ferrule, with Ring for end of wood.
469. Sizes of Open Ferrule, 1⅜ and 1½ in. inside.
470. " Closed-end Ferrule, 1⅜ and 1½ in. inside.

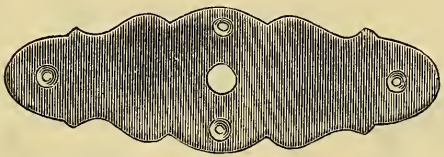
See illustration of Neck Yoke complete with above Trimmings, page 841.

MALLEABLE IRONS.

Wood's Patent Improved Whiffletree Trimmings.



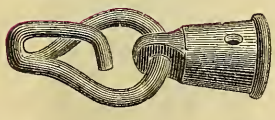
No. 471. Evener Shield Plate. Size, 2½ × 3 in. 4 to an Evener.



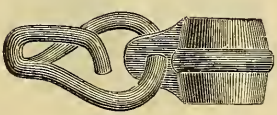
No. 472. Evener Center Guard Plate. Size, 3 × 9½ in. 2 to an Evener.

Whiffletree Hooks and Ferrules Combined.

Sizes,	1¼	1⅜	1½ in. Ferrule.
Nos.	473	474	475



Sizes,	1¼	1⅜	1½ in.
Nos.	476	477	478



Sizes,	1¼	1⅜	1½ in.
Nos.	479	480	481

For Whiffletree Center Irons see Nos. 39, 40, 41, 42, 42½, for Round; Nos. A, B, C, D, E, for Oval.

For Evener Clevises, any style ordinarily used for such purposes, can be used with above Trimmings.

See illustration of Whiffletree and Evener complete with above Trimmings, page 841.

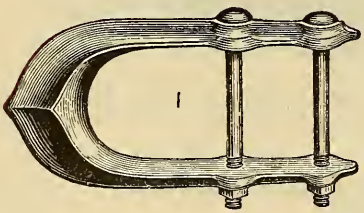
MALLEABLE IRONS.

Ely's Patent Whiffletree Trimmings.

FOR IRONING WAGON WHIFFLETREES.

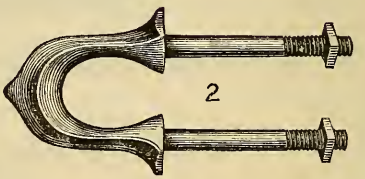
Put up Boxed in Sets complete, with threads cut and furnished with nuts ready for use.

EACH SET CONSISTS OF



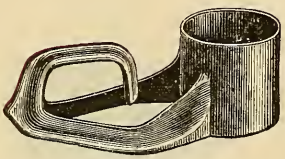
Two Clevises, No. 1.

1⅞ in. inside measure.



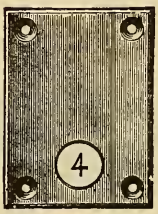
Two Hooks, No. 2.

Entire length 6 in. Length of Shank, 3¼ in.



Four Hooks, No. 3.

Ferrule measures 1⅜ in. inside small end.



One Plate, No. 4.

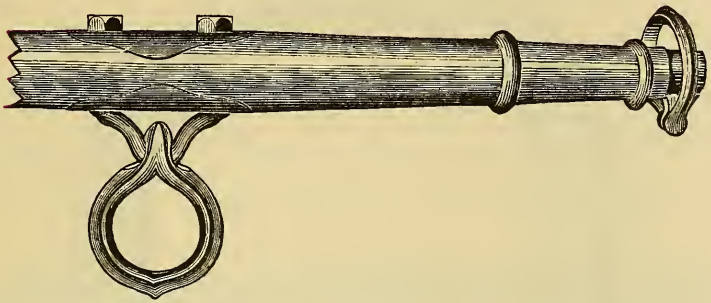
Measures 2⅜ × 3⅜ in.

Price---------- $1 25 per Set, complete.

MALLEABLE IRONS.

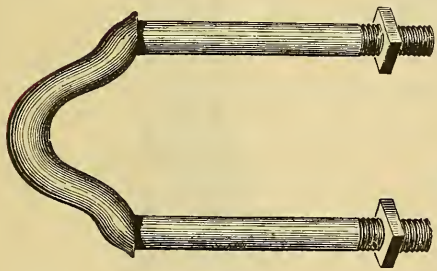
Ely's Neck Yoke Trimmings.

FOR IRONING HEAVY LUMBER WAGON NECK YOKES.



Put up Boxed in Sets complete, with threads cut, and furnished with nuts ready for use.

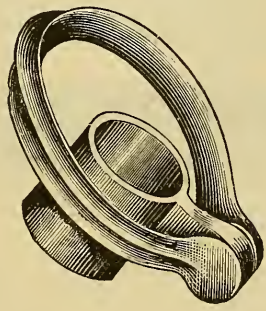
EACH SET CONSISTS OF



One Staple with Center Ring, to be used as shown above, for Center Coupling.

Two Plates with Staple Holes for use with Center Staple.

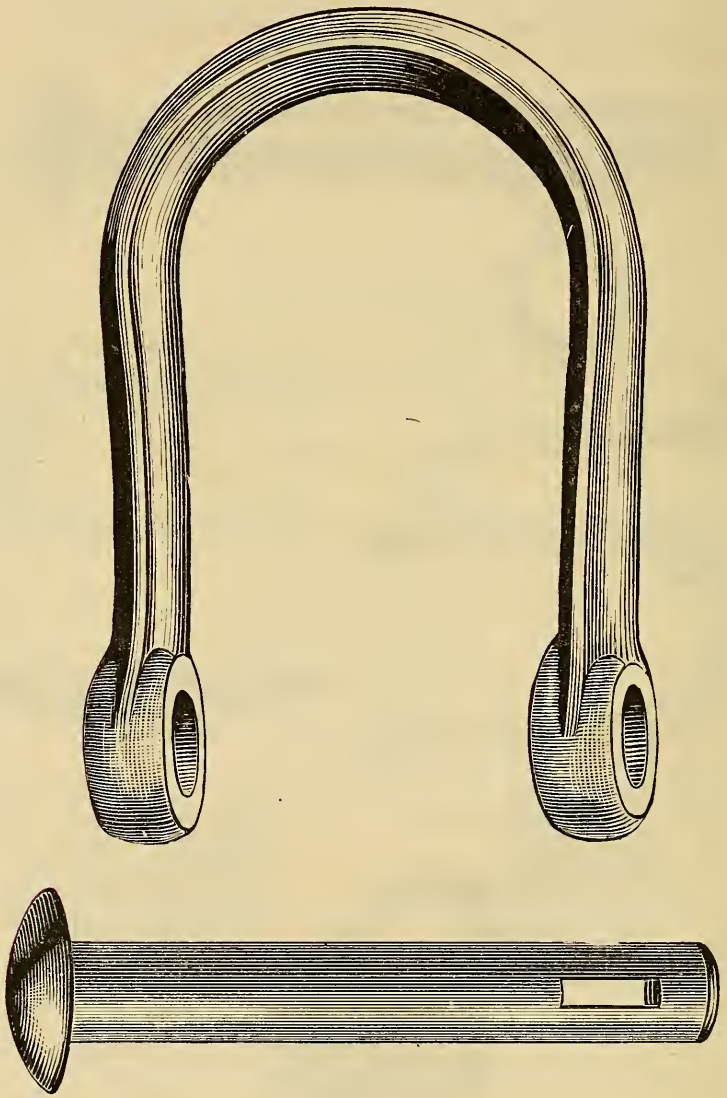
Two End Couplings,



as shown in cut.

Price ..... $1 25 per set, complete.

WROUGHT IRON CLEVIS AND PIN.



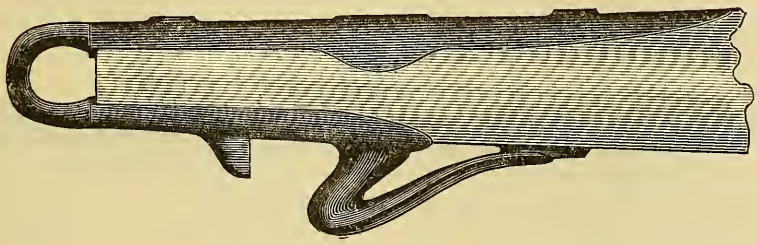
Full Size.

Price, complete ..... 12 cents each.

WAGON HARDWARE.

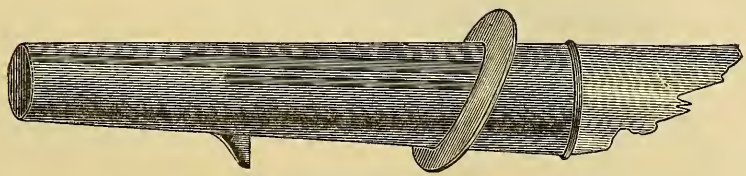
Moon's Improved Neck Yoke.

For Lumber Wagons, complete ..... $24 00 per dozen.



Moon's Improved Tongue Cap.

In one piece, fitted ready for use..... $12 00 per dozen.



Moon's Improved Pole Tip.

Above Tip has Collar all round, thereby holding the Yoke much steadier, fitted ..... $2 00 per dozen.

All of the above Trimmings are made of the best Malleable Iron, being entirely new in design, and very desirable goods.

WAGON HARDWARE.

WROUGHT IRON.

Narrow Track, Box Rod.

Price ..... 15 cents each.

Wide Track, Box Rod.

Price ..... 17 cents each.

Wagon Box Strap Bolt.

Eight Bolts make a Set.

Standard Size,	10	in. long by	$\frac{7}{16}$	Screw End	$0 45	per set.
"	12	"	$\frac{1}{2}$	"	55	"
"	10	"	$\frac{9}{16}$	"	65	"
"	12	"	$\frac{9}{16}$	"	70	"
"	14	"	$\frac{9}{16}$	"	80	"
"	10	"	$\frac{5}{8}$	"	80	"
"	12	"	$\frac{5}{8}$	"	80	"
"	14	"	$\frac{5}{8}$	"	90	"
"	16	"	$\frac{5}{8}$	"	1 00	"
"	18	"	$\frac{5}{8}$	"	1 10	"
"	20	"	$\frac{5}{8}$	"	1 20	"

For each additional inch over 14 in., 5 cents.

In ordering Wagon Box Strap Bolts, always give the length of Strap and diameter at Screw End.

WAGON HARDWARE.

WROUGHT IRON.

Brake Ratchet, without Guard.

Price ..... 14 cents each.

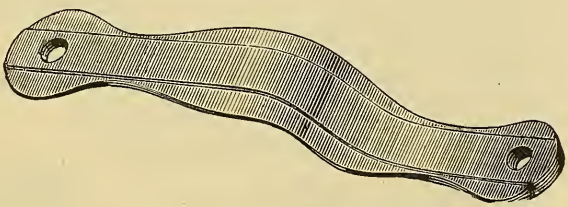
Brake Ratchet, with Guard.

Price ..... 40 cents each.

Single Tree Iron.

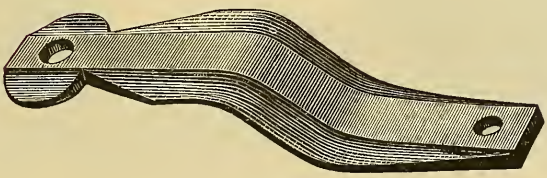
Price ..... 30 cents per set.

Four pieces make a set.



Light Hammer Strap.

Price ..... 12 cents each.

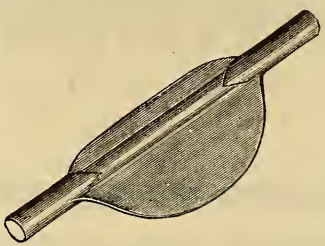


Heavy Hammer Strap.

Price ..... 13 cents each.

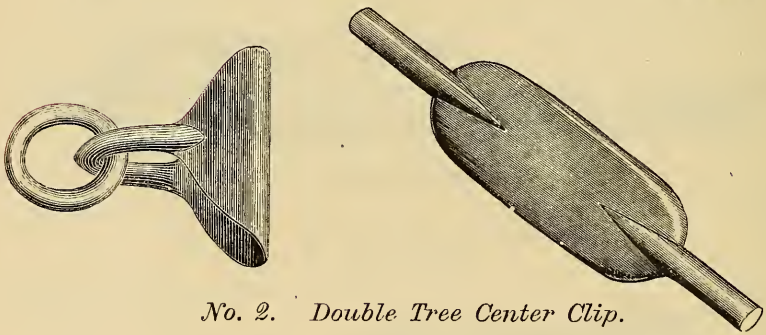
WAGON HARDWARE.

WROUGHT IRON.



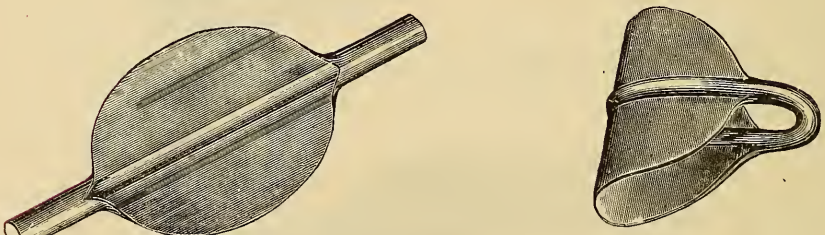
No. 1. Single Tree End Clip.

Price ..... 8 cents each.



No. 2. Double Tree Center Clip.

Price ..... 9 cents each.
" with Ring ..... 15 " "

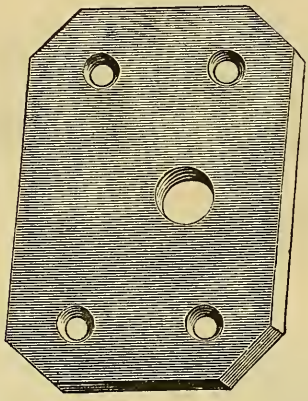


No. 3. Heavy Double Tree Center Clip.

Price ..... 11 cents each.

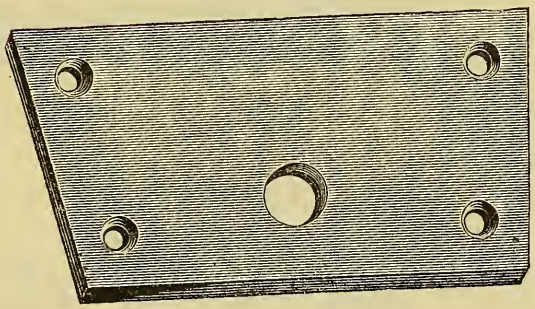
WAGON HARDWARE.

WROUGHT IRON.



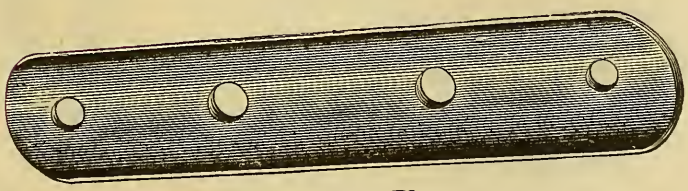
Double Tree Plate.

Price ..... 9 cents per pound.



Tongue Plate.

Price ..... 9 cents per pound.



Neck Yoke Plate.

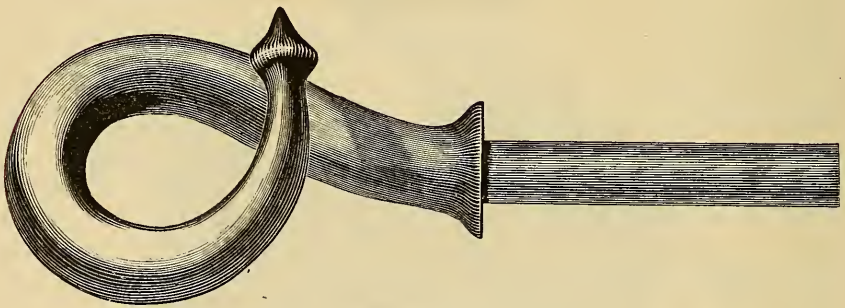
Price ..... 11½ cents per pound.

WAGON HARDWARE.

WROUGHT IRON.

Stay Chain Hook.

Price.....7 cents each.



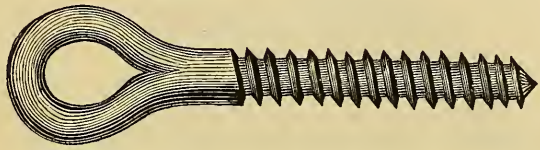
No. 1. Whiffletree Hook.

Price.....6 cents each.

No. 2. Whiffletree Hook.

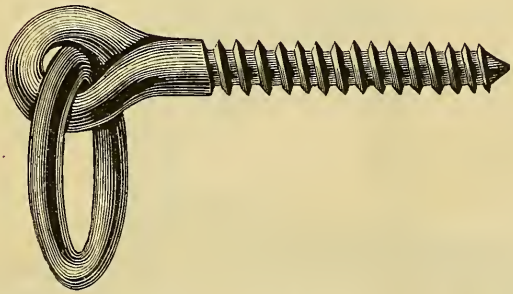
Price.....6 cents each.

WAGON HARDWARE.



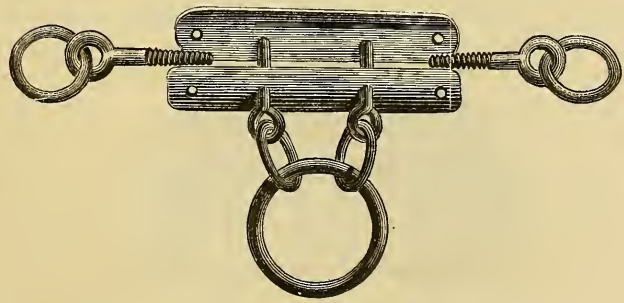
Wrought Neck Yoke Eye.

Price ..... $6 00 per hundred.



Wrought Neck Yoke Eye and Ring.

Price ..... $8 00 per hundred.

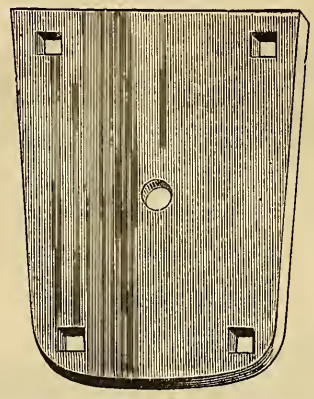


Wrought Neck Yoke Irons, complete.

Price ..... $1 25 per set.

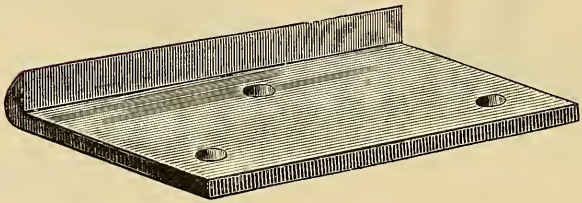
WAGON HARDWARE.

WROUGHT IRON.



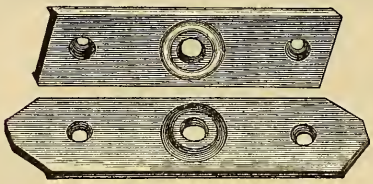
Reach Coupling Plate.

Price ..... 6 cents per pound.



Rub Iron.

Price ..... 9 cents each.

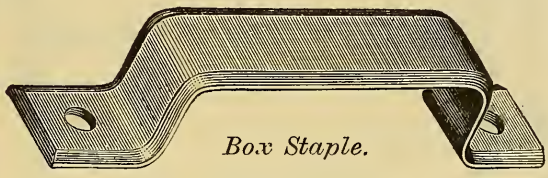


Wrought Iron Bolster Plate.

Width, 2¾ in	45	cents per set.
" 3	50	" "
" 3¼	55	" "
" 3½	60	" "

WAGON HARDWARE.

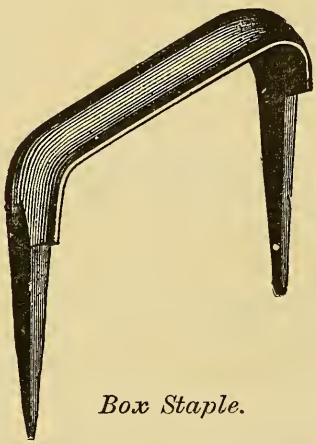
WROUGHT IRON.



Box Staple.

Made of Bevel Box Iron, to rivet on.

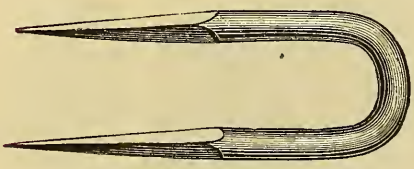
Price ..... $12 00 per thousand.



Box Staple.

Made to Drive and Clinch 1½ to 2½ in.

Price ..... $15 00 per thousand.



Wrought Iron Staples.

For agricultural work and other purposes.

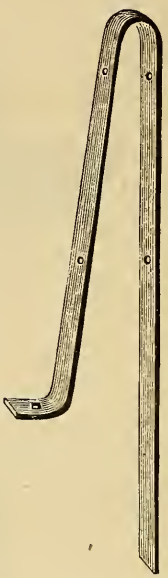
Lengths,	1	1¼	1½	1¾	2	2¼	2½ in.
Price,	$1 10	1 15	1 15	1 20	1 35	1 70	1 90 per gross.
Lengths,	2¾	3	3½	4	4½	5	6 in.
Price,	$2 20	2 70	3 30	5 50	6 50	7 00	8 50 per gross.

WAGON HARDWARE.

Ordinary Pattern.

Wrought Iron

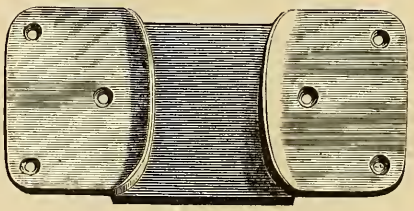
Wagon Stakes.



Chicago Pattern.

¾ × ¼ in. for 12 and 14 in. Stakes	$0 80	per set of 4 pieces.
⅞ × ¼ " " "	90	" "
1 × ¼ " " "	1 00	" "

The above are new additions to Wagon Hardware, punched and bent by machinery, has no hammer marks, is much smoother and stiffer than those made by hand, and finished ready for immediate use. Can furnish any length desired.



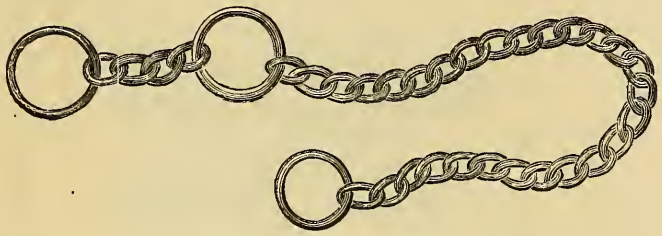
Wagon Box Stay Iron.

Price ..... $6 00 per dozen pairs.

Designed to be used over the hind Bolster of the wagon, screwed fast to the side of the Box for the hind Stakes to rest in, thereby lessening the wear and tear of the Box caused by the Stakes; also holds the Box firmly in position.

WAGON HARDWARE.

WROUGHT IRON.

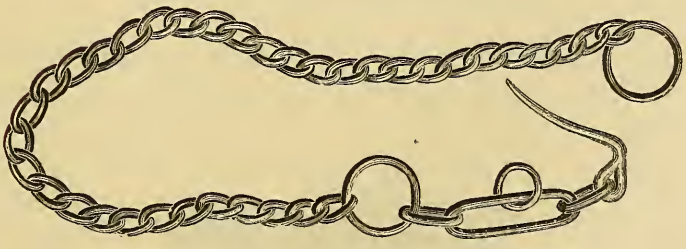


Wagon Pole Chain.

Made 1/4 in. Link ..... 12½ cents per pound.
" 5/16 " ..... 11½ " "
" 3/8 " ..... 10½ " "

Wagon Stay Chain.

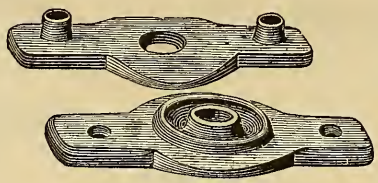
Made 1/4 in. Link ..... 12½ cents per pound.
" 5/16 " ..... 11½ " "
" 3/8 " ..... 10½ " "



Wagon Lock Chain.

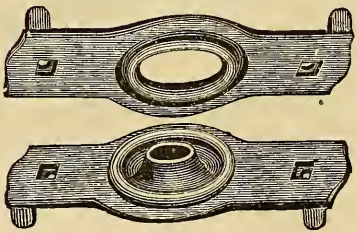
Made 1/4 in. Link ..... 12½ cents per pound.
" 5/16 " ..... 11½ " "
" 3/8 " ..... 10½ " "

WAGON HARDWARE.



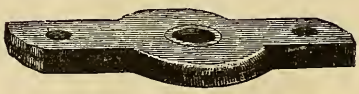
Miles' Patent Bolster Plate.

No. 1.	Length,	8 in.	Width of Center,	3¼ in.	Size of Bolt,	⅞ in.	$0	70	per	set.
2.	"	9	"	3¾	"	1⅛	0	80	"	
3.	"	10	"	5	"	1⅛	1	00	"	
4.	"	11	"	5½	"	1¼	1	20	"	



Common Bolster Plate.

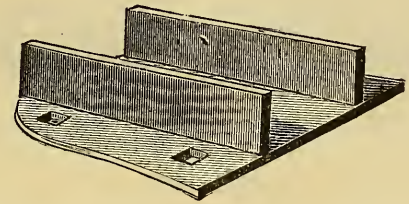
Length,	9 in.	$0	50 per set.
"	10	0	65 "
"	11	0	70 "



Old Style Bolster Plate.

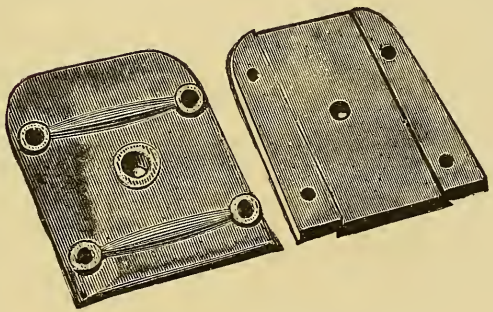
Length,	8 in.	light	$0	45 per set.
"	9	medium	0	55 "
"	10	heavy	0	65 "

WAGON HARDWARE.



Cast Iron Reach Plate, with Flange.

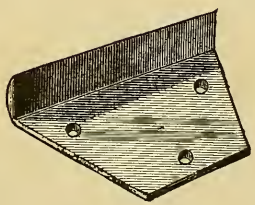
No. 1.	Width,	3⅝	in.	Thickness,	1⅞	in.	Length, 8 in.	5	cents per pound.
2.	"	4		"	2		" 9	5	" "
3.	"	4¼		"	2		" 9	5	" "
4.	"	4½		"	2		" 9¼	5	" "



Cast Iron Double Reach Plate.

Width of Reach, 4⅛ in. Two Sizes, Light and Heavy.

Price ..... 5 cents per pound.



Cast Rub Iron.

Price ..... 5 cents per pound.

SEAMLESS THIMBLE SKEINS.

With Cut Thread.

PRICE LIST.

Size, 1¾ × 6	$3 75	per set.
" 2 × 6	3 75	"
" 2 × 6½	3 75	"
" 2⅛ × 6½	3 75	"
" 2¼ × 7	3 75	"
" 2¼ × 7½	4 25	"
" 2½ × 7½	4 50	"
" 2½ × 8	4 60	"
" 2¾ × 8	4 90	"
" 2¾ × 8½	4 90	"
" 3 × 9	6 00	"
" 3 × 10	7 00	"
" 3¼ × 9	6 90	"
" 3¼ × 10	7 50	"
" 3¼ × 11	8 00	"
" 3½ × 10	8 00	"
" 3½ × 10½	8 00	"
" 3½ × 11	8 00	"
" 3½ × 12	8 05	"
" 3¾ × 11	8 25	"
" 3¾ × 12	8 60	"
" 4 × 12	9 75	"
" 4¼ × 12	15 00	"
" 4½ × 12	16 00	"
" 4½ × 12½	17 00	"
" 4½ × 13	18 00	"
" 5 × 14	22 00	"

These Skeins are cast from whole Patterns.

SEAMLESS THIMBLE SKEINS.

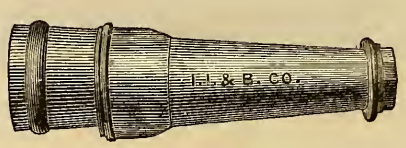
Chicago Pattern, with Patent Chambered Box.

PRICE LIST.

Size, 1¾ × 6	$3 75	per set.
" 2 × 6	3 75	"
" 2 × 6½	3 75	"
" 2⅛ × 6½	3 75	"
" 2¼ × 7	3 75	"
" 2¼ × 7½	4 25	"
" 2½ × 7½	4 50	"
" 2½ × 8	4 60	"
" 2¾ × 8	4 90	"
" 2¾ × 8½	4 90	"
" 3 × 9	6 00	"
" 3 × 10	7 00	"
" 3¼ × 9	6 90	"
" 3¼ × 10	7 50	"
" 3¼ × 11	8 00	"
" 3½ × 10	8 00	"
" 3½ × 10½	8 00	"
" 3½ × 11	8 00	"
" 3⅝ × 12	8 05	"
" 3¾ × 11	8 25	"
" 3¾ × 12	8 60	"
" 4 × 12	9 75	"
" 4¼ × 12	15 00	"
" 4½ × 12	16 00	"
" 4½ × 12½	17 00	"
" 4½ × 13	18 00	"
" 5 × 14	22 00	"

These Skeins are cast from Whole Patterns.

THIMBLE SKEINS.



Dundee Pattern, with Cut Thread.

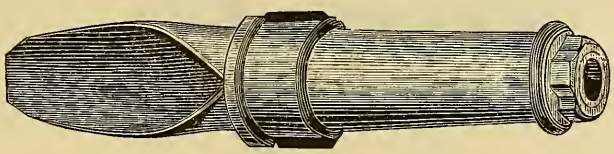
PRICE LIST.

Size, 2 × 6½	$3 75	per set.
" 2⅛ × 6½	3 75	"
" 2⅛ × 7	3 75	"
" 2¼ × 7	3 75	"
" 2¼ × 7½	3 90	"
" 2⅜ × 7½	4 25	"
" 2½ × 7½	4 50	"
" 2½ × 8	4 60	"
" 2¾ × 8	4 90	"
" 2¾ × 8½	4 90	"
" 3 × 9	6 00	"
" 3¼ × 10	7 50	"
" 3½ × 10	8 00	"
" 3¼ × 11	8 00	"
" 3½ × 11	8 00	"
" 3½ × 12	8 05	"
" 3¾ × 11	8 25	"
" 3¾ × 12	8 60	"
" 4 × 12	9 75	"
" 4½ × 12	15 00	"
" 4½ × 13	18 00	"
" 5 × 13	21 00	"
" 5 × 14	22 00	"

Above are manufactured from the best Lake Superior Charcoal Iron, with brass patterns. They are a strong, durable and very smooth Skein.

List on Seamless Skeins same as above.

STEEL WAGON SKEINS.



Schreyer's Patent.

PRICE LIST, WITH NUTS.

Size, 2½ × 7½	$8 50	per set.
" 2¾ × 8½	9 00	"
" 3 × 9	10 50	"
" 3¼ × 10	12 25	"
" 3½ × 10½	13 75	"
" 3½ × 12	13 75	"
" 3¾ × 12	15 00	"
" 4 × 12	17 00	"

PRICE LIST, WITH LINCHPINS.

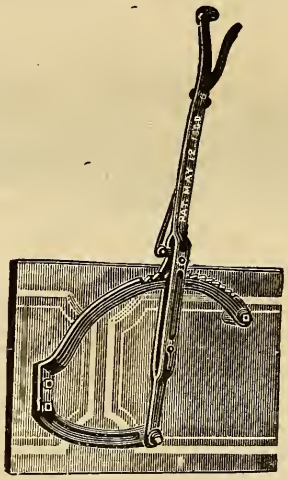
Size, 2½ × 7½	$8 25	per set.
" 2¾ × 8½	8 50	"
" 3 × 9	9 50	"
" 3¼ × 10	11 00	"
" 3½ × 10½	12 50	"
" 3½ × 12	12 50	"
" 3¾ × 12	13 50	"
" 4 × 12	15 50	"
" 4¼ × 12	18 75	"
" 4½ × 13	21 75	"
" 5 × 14	26 25	"
" 5½ × 14	31 25	"
" 6 × 15	40 50	"

NOTE.—When orders are received which do not designate whether wanted with Nuts or Linchpins, the Linchpins will be sent.

REMARKS.

The above Skeins are not new, but are standard among dealers where they have been introduced. The Sleeve or Spindle is forged from pure sheet steel, and when properly fitted on wood axles makes easy-running wagons, and will carry heavy loads with little friction, are light, and have more space for wood in the Spindle than cast-iron Skeins. They rarely break under any circumstances, and are extensively used in all the mining and manufacturing regions where heavy drafting is done. A trial is all that is necessary to convince everyone of their excellence and durability.

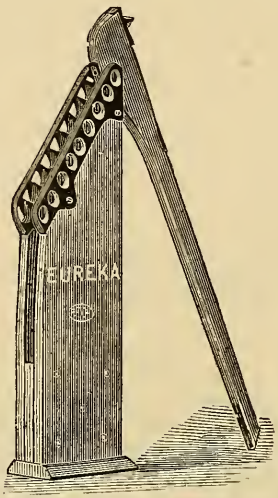
WAGON BRAKE AND WAGON JACK.



Northlich's Self-Drop Wagon Brake.

The Best Brake Made..... $1 50 each.

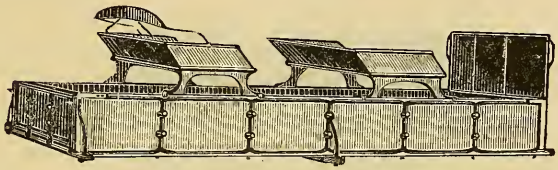
To fasten into the Box, see that the front Bolster is square; then draw a square line 18 in. back of front Standards (either right or left); then bolt the Square Elbow of Circle with Square Line, and have the Circles about even with bottom of Bed.



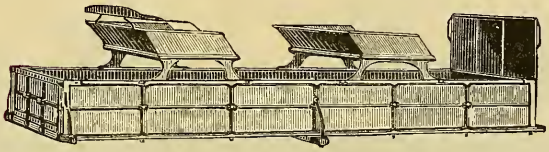
Eureka Wagon Jack.

Light, Durable, and Cheap..... $1 50 each.

EXPRESS WAGON BODIES.



Burr's Patent. 1 Panel.



Burr's Patent. 2 Panel.

Burr's Patent. 3 Panel.

PRICE LIST.

No. 0.	9 in.	Body,	plain,	1	Seat,	with	Dash	$17 00
1.	9	"	1 panel,	1	Seat,	with	Dash	19 00
2.	9	"	2 "	1	"	"		20 25
3.	10	"	1 "	1	"	"		20 25
4.	10	"	2 "	1	"	"		21 50
5.	10	"	3 "	1	"	"		22 75
6.	12	"	3 "	Toe-board	and	Rail		34 50
7.	14	"	3 "	"		"		40 00

Nos. 1 to 5. With Toe-board and Rail, at prices above.

1 " 5. Light City Delivery and Farm Business Wagons.

No. 6. Heavy Delivery and Express.

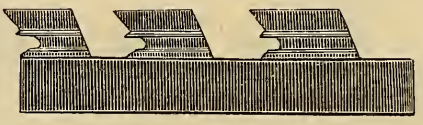
7. City Express.

Extra Seats, $3 00 each. Lazy-backs, $1 50 each.

Above Bodies are made without mortise or tenon, leaving the whole strength of the wood where it is weakest. The corner pillars are malleable iron, and receive the Side Slats without framing, thereby giving the frame more strength. The frames are secured at the four corners by malleable iron flange corner plates, put together with bolts, and can be replaced if unfortunate in breaking one. They are so constructed that they can be taken apart, painted, and shipped in same manner as Lumber Wagon Bodies.

In repairing the Body, any part can be removed without disturbing any other part, with very little trouble and expense. When complete they look lighter and more pleasing in appearance than the ordinary mortise and tenon body.

EXPRESS WAGON BODIES.

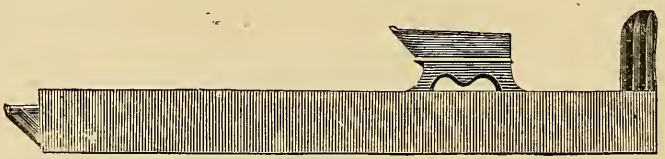


No. 10. Farmer's.

Bent Corners, 7 to 8 feet long $22 00
Square " 7 " 8 " " 20 00

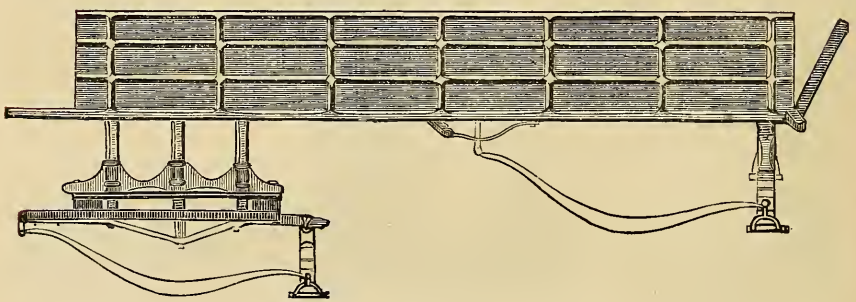
No. 11. Express.

Two Panel with Dash $25 00
" " " Toe Board 25 00



No. 12. Spring Wagon.

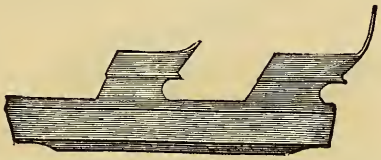
7 to 8 feet long $20 00



No. 13. 3 Panel Express.

Price $30 00

CARRIAGE BODIES.

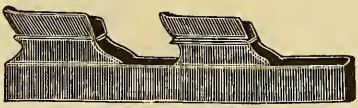


No. 14. Depot Wagon.

Round Corners $25 00

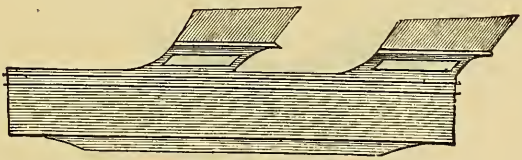
No. 15. Piano.

Bent Corner $20 00
Square " 18 00



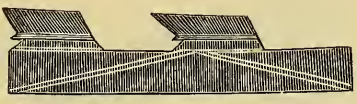
No. 16. Jagger.

Bent Corner $18 00
Square " 16 00



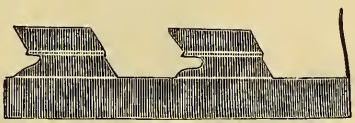
No. 17. Piano.

Square Corner, drop bottom $20 00



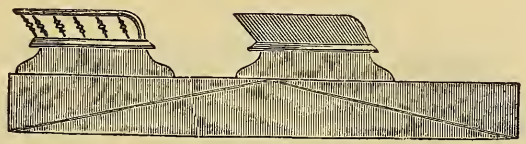
No. 18. Jagger.

Bent Corner, 5 to 6 ft long $18 00
Square " 5 " 6 " 16 00



No. 19. Granger.

Shifting Seats with Dash $18 00



No. 20. Jagger.

Bent Corner, 5 to 6 ft. long, 1 spindle seat $18 00
Square " 5 " 6 " 1 " 16 00

CARRIAGE BODIES.

No. 21. Depot Wagon.

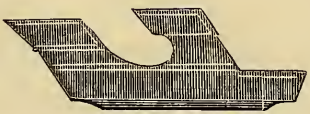
Square Corner..... $23 00 Bent Corner..... $25 00

No. 22. Victoria.

Phaeton..... $50 00

No. 23. Philadelphia.

Two-Seat..... $50 00



No. 24. Swell Back.

Carriage..... $25 00

No. 25. Barouche.

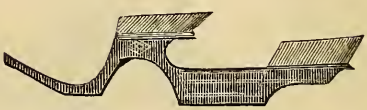
Two Seats..... $45 00

No. 26. One-horse Carriage.

Two Seats..... $40 00

No. 27. Louisville.

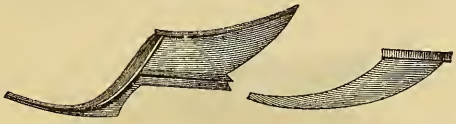
Business Wagon..... $25 00



No. 28. Carriage.

Two Seat..... $40 00

CARRIAGE BODIES.



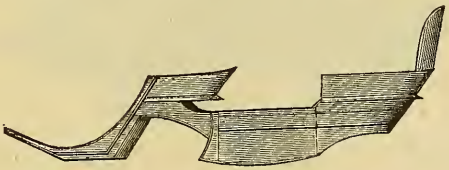
No. 29. Phaeton, with Rumble.

With Rumble..... $35 00 Without Rumble..... $25 00

No. 30. Four Passenger Park Phaeton.

Without Doors..... $40 00 With Doors..... $50 00

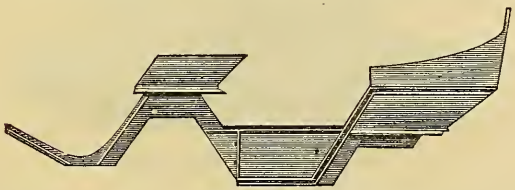
For Extension Tops. For one or two horses.



No. 31. Extension Top Phaeton.

Six Seat, has a small folding seat for children..... $70 00

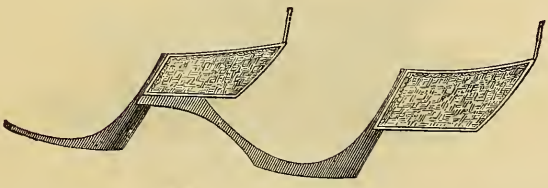
Can be used with Perch Gear or Platform Springs.



No. 32. Extension Top Phaeton.

With Doors..... $50 00 Without Doors..... $40 00

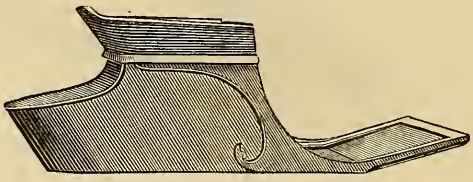
Latest Style.



No. 33. Basket Phaeton.

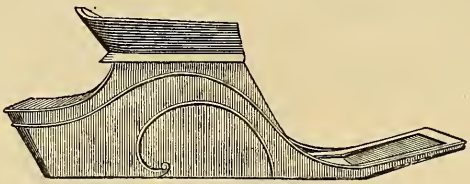
English, Two Seat..... $65 00

CARRIAGE BODIES.



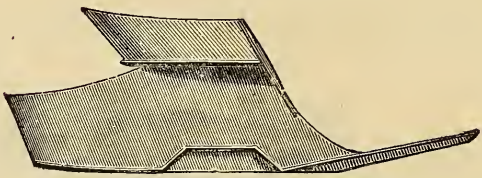
No. 34. Coal Box.

Bent in one piece $20 00



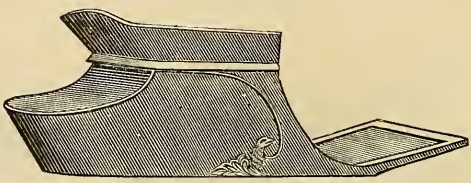
No. 35. Coal Box.

Scroll Side, Bent Back $20 00



No. 36. Coal Box.

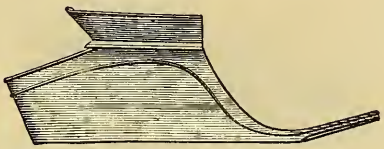
Panel, bent in one piece $20 00



No. 37. Coal Box.

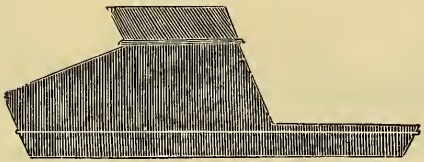
Half Carved, Bent Back $22 00

CARRIAGE BODIES.



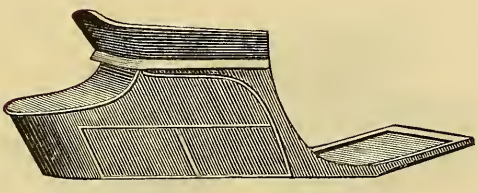
No. 38. Coal Box.

Bent in One Piece $20 00



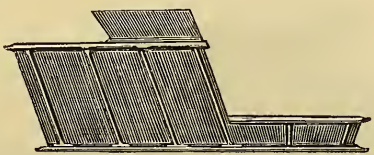
No. 39. Coal Box.

Price $18 00



No. 40. Coal Box.

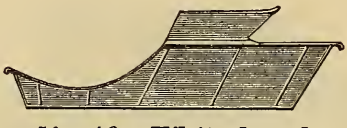
Panel Side, Bent Back $20 00



No. 41. Coal Box.

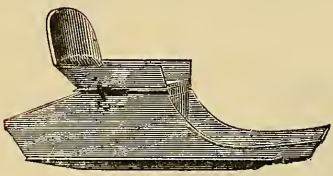
New Style, Double Frame $30 00

CARRIAGE BODIES.



No. 42. Whitechapel.

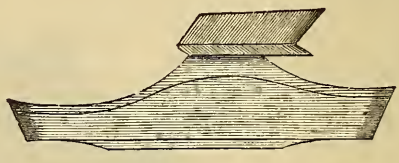
May be used for Side Spar or End Springs.....$20 00



No. 43. Dexter.

SQUARE CORNERS.

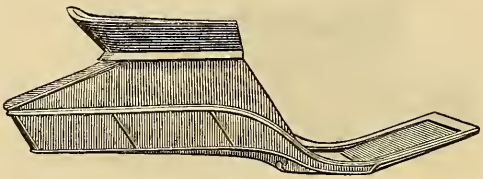
For Side Springs, High-back Seat..$20 00
" End " Low " " .. 18 00



No. 44. Dexter.

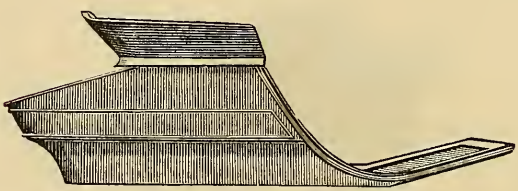
ROUND CORNERS.

For Side Springs.....$20 00
" End " 19 00



No. 45. Drop Front.

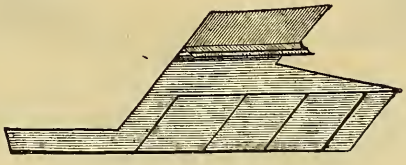
Panel Side.....$25 00



No. 46. Coal Box.

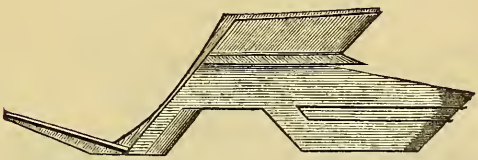
Concave.....$25 00

CARRIAGE BODIES.



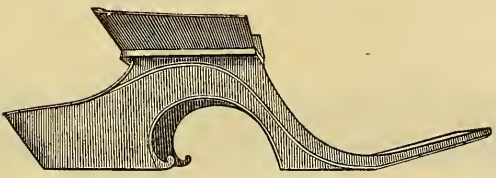
No. 47. Coal Box.

Deep Sides, Swell Back $22 00



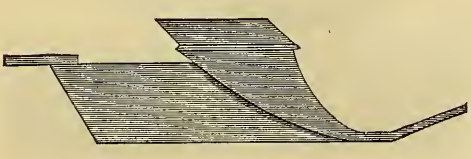
No. 48. Coal Box.

Cut under with Stanhope Pillar $25 00



No. 49. Coal Box.

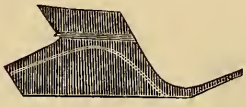
Cut under $25 00



No. 50. Coal Box.

Plain Sides, Turn Out Seat $25 00

CARRIAGE BODIES.



No. 51. Coal Box.

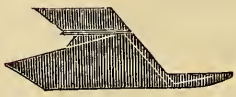
Square $13 00

No. 22. Coal Box.

Scroll Side $20 00

No. 53. Coal Box.

Jump Seat Improved $30 00

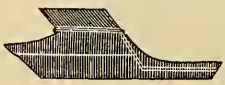


No. 54. Coal Box.

Diamond $23 00

No. 55. Coal Box.

Diamond Edge $25 00

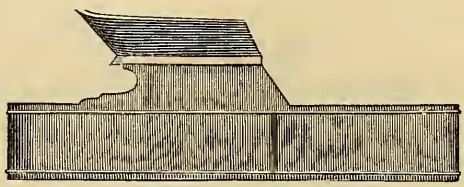


No. 56. Coal Box.

Bevel Side $25 00

No. 57. Coal Box.

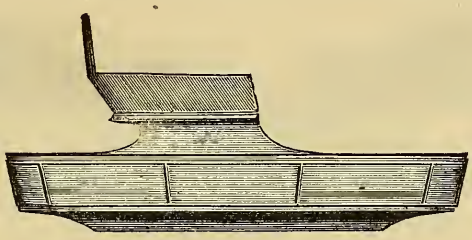
Yacht Front $20 00



No. 58. Piano.

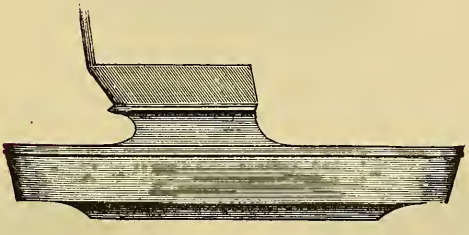
Round Corner, Deep $18 00

CARRIAGE BODIES.



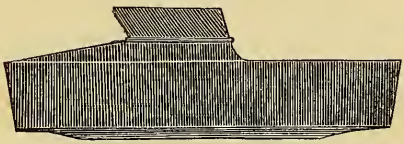
No. 59. Piano.

Round Corner, with Moulding $22 00



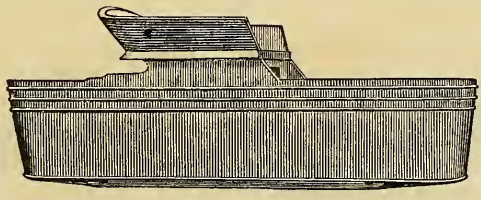
No. 60. Piano.

Round Corners, Plain Side $20 00



No. 61. Piano.

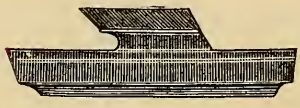
Closed Back $20 00



No. 62. Piano.

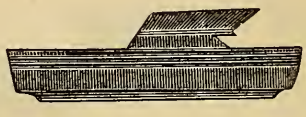
Round Corners, Deep $25 00

CARRIAGE BODIES.



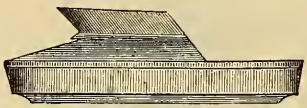
No. 62. Piano.

Bent Corners $17 00



No. 63. Piano.

Philadelphia $20 00



No. 64. Piano.

Round Corners, New York style $18 00

No. 65. Piano.

LaPorte $18 00

No. 66. Side Spring.

Buckeye $17 00

No. 67. Illinois.

Side Spring $18 00

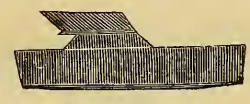
No. 68. Philadelphia.

Square Box $12 00

No. 69. New Haven.

Square Box $14 00

CARRIAGE BODIES.

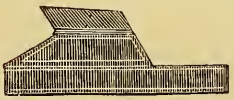


No. 70. Road Wagon.

Diamond Seat, Swell Sides and Ends $20 00
Light Three-quarters 19 00

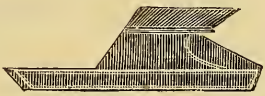
No. 71. Russell.

Top Buggy, Open Back ..... $18 00 Closed Back $20 00



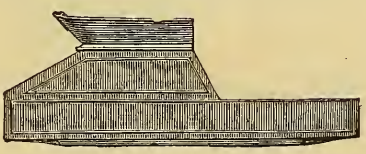
No. 72. New York.

Bent Corner $12 00
Square " 11 00



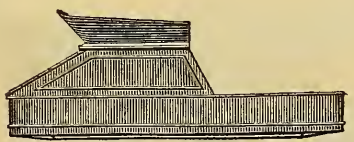
No. 73. Concord.

Panel Sides $11 00



No. 74. New York.

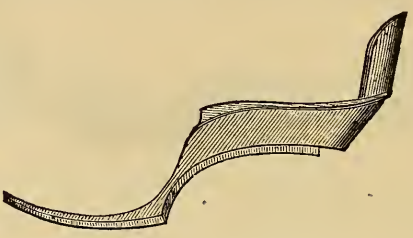
Square Corners, Drop Bottom $12 00



No. 75. New York.

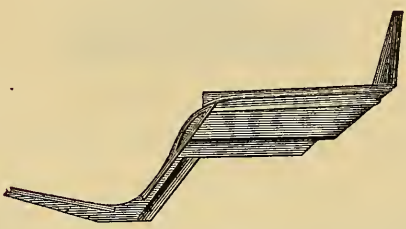
Round Corners, Drop Bottom $14 00

CARRIAGE BODIES.



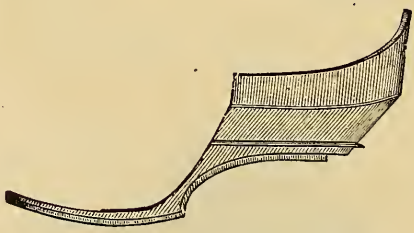
No. 76. Phaeton.

Humboldt Park $25 00



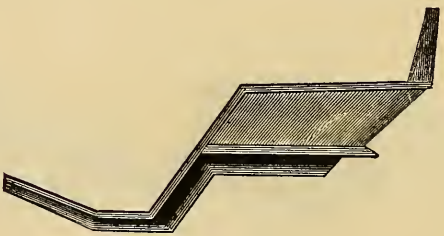
No. 77. Phaeton.

Douglass Park $33 00



No. 78. Phaeton.

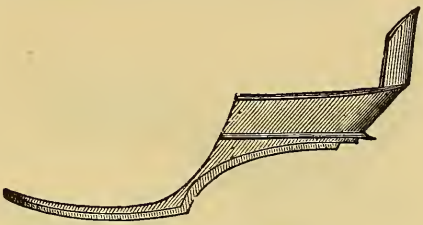
Central Park $30 00



No. 79. Phaeton.

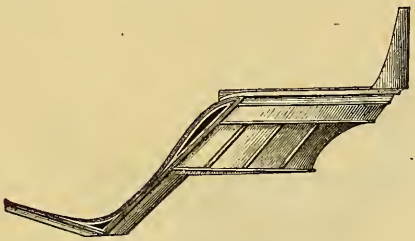
Lincoln Park $30 00

CARRIAGE BODIES.



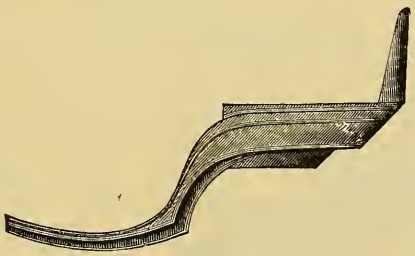
No. 80. Phaeton.

Union Park $25 00



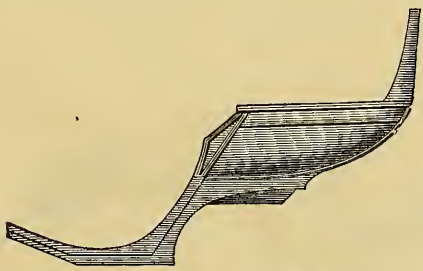
No. 81. Phaeton.

Boulevard $45 00



No. 82. Phaeton.

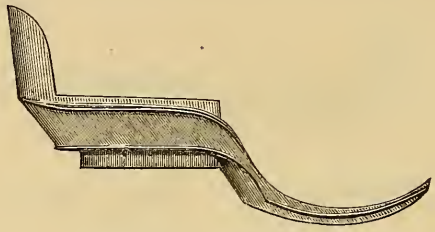
Long Branch $35 00



No. 83. Phaeton.

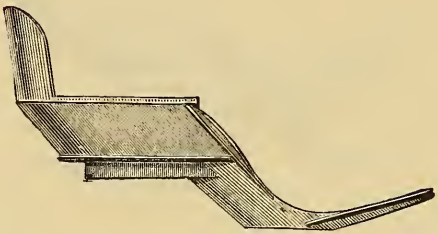
Grant $35 00

CARRIAGE BODIES.



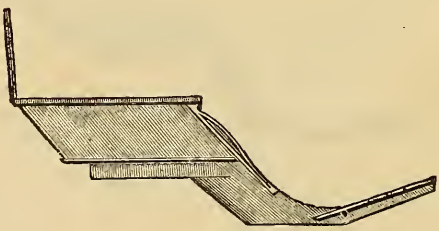
No. 84. Phaeton.

Pony, Light $25 00



No. 85. Phaeton.

Suitable for Platform or Elliptic Springs $30 00



No. 86. Phaeton.

Square Corners $33 00

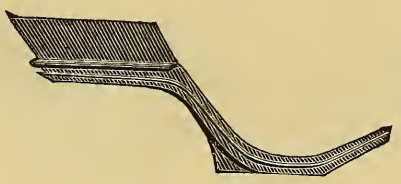
No. 87. Phaeton.

Hartford Style $33 00

No. 88. Phaeton.

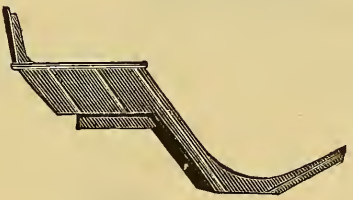
Barker $35 00

CARRIAGE BODIES.



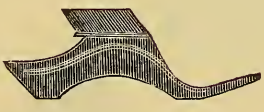
No. 89. Phaeton.

South Park $20 00



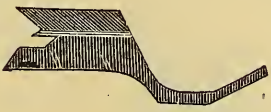
No. 90. Phaeton.

Chicago Style $30 00



No. 91. Arched.

Bent Back $22 00



No. 92. Drop Front.

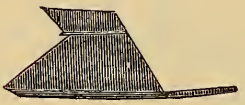
Panel Side $20 00

No. 93. Business Wagon.

Bent Corners $25 00

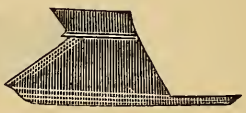
Square " 22 00

CARRIAGE BODIES.



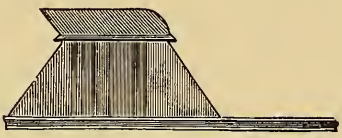
No. 94. Yacht.

Swell Back $20 00



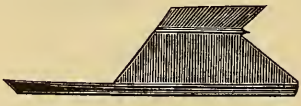
No. 95. Yacht.

Round Corner $16 00



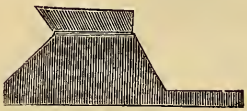
No. 96. Solid Sill.

Price $15 00



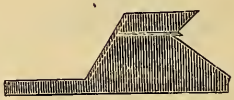
No. 97. Solid Sill.

Concave $15 00



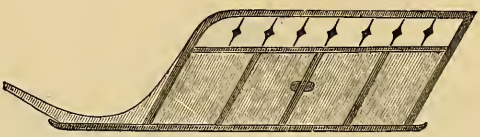
No. 98. Trotting.

Plain $10 00



No. 99. Trotting.

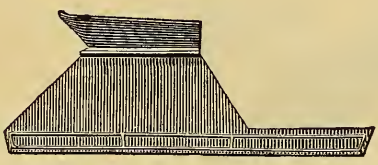
Winged $13 00



No. 100. Park Buggy.

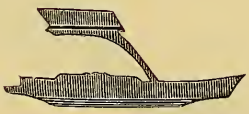
Fancy $35 00

CARRIAGE BODIES.



No. 101. Concord.

Panel Side $10 00

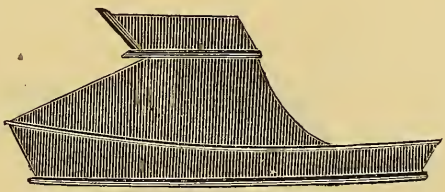


No. 102. Michigan.

Side Spring $13 00

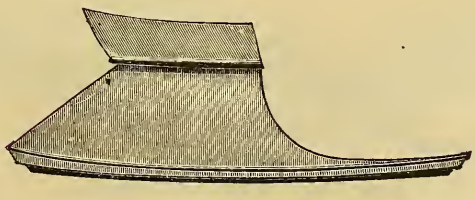
No. 103. Roustabout.

Side Spring $10 00



No. 104. Concord.

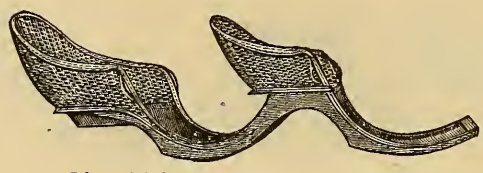
Closed Back $25 00



No. 105. Concord.

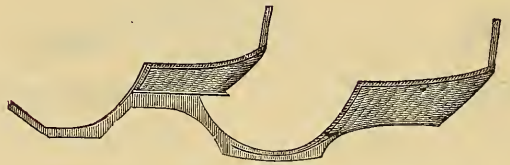
Swell Bottom $20 00

CARRIAGE BODIES.



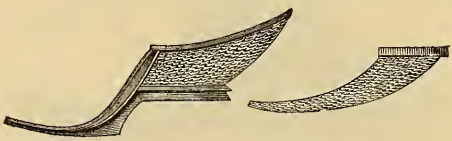
No. 106. Basket Phaeton.

Two Seats, Round Corners $50 00



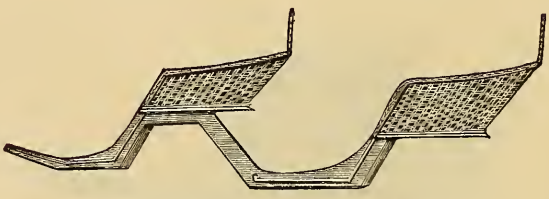
No. 107. Basket Phaeton.

Two Seats $65 00



No. 108. Basket Phaeton.

With Rumble $40 00



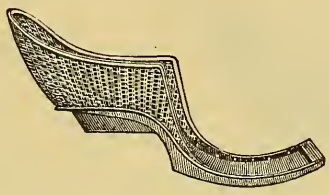
No. 109. Basket Phaeton.

Two Seats, Square Corners $50 00

CARRIAGE BODIES.

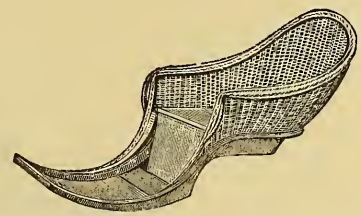
No. 110. Basket Phaeton.

Queen's, One Seat $30 00



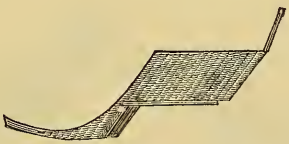
No. 111. Basket Phaeton.

For Open Carriage..... $23 00
" Canopy " 24 00



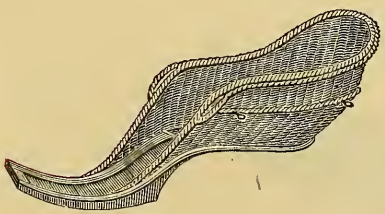
No. 112. Basket Phaeton.

Open, with Arm Rests..... $25 00
Canopy, " " 27 00



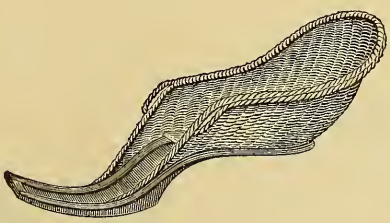
No. 113. Basket Phaeton.

English, One Seat..... $31 00



No. 114. Basket Phaeton.

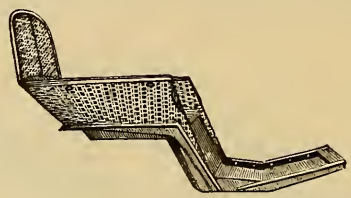
With Double Rail and Handles, $30 00
" " " Ironed for Top, 31 00



No. 115. Basket Phaeton.

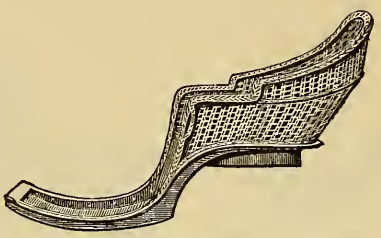
With Single Rail and Handles, $27 00
" " " Ironed for Top, 30 00

CARRIAGE BODIES.



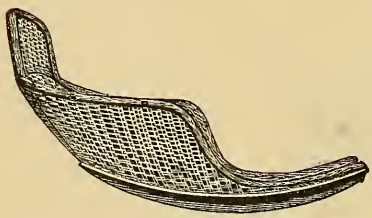
No. 116. Basket Phaeton.

Square Cornered $27 00



No. 117. Basket Phaeton.

With Double Rail $27 00

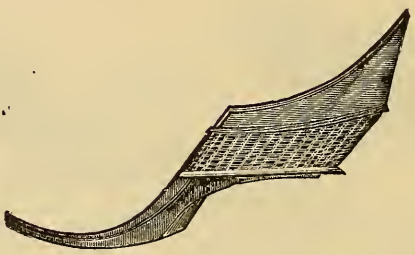


No. 118. Basket Phaeton.

Queen Victoria $27 00

No. 119. Basket Phaeton.

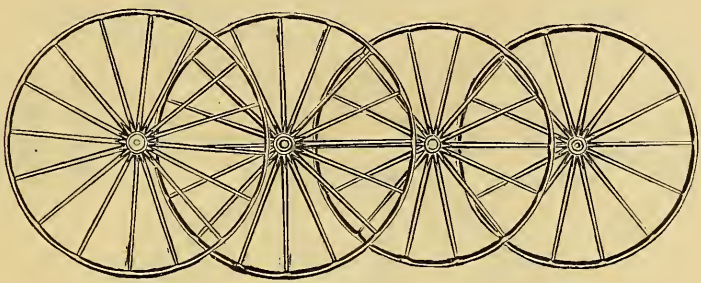
Queen Elizabeth $27 00



No. 120. Basket Phaeton.

With Bent Wood Work $33 00

WHEELS.



With Wood Hub.

PRICE PER SET.

MIXED SECOND GROWTH SPOKES.

TREAD.	SIZE OF SPOKE.	HEIGHT.	PRICE.
⅞ in.	$\frac{15}{16}$ or 1 in.	3 ft. 10 in. and 4 ft. 2 in.	$10 00
1	1⅛ " 1¼	3 10 " 4 2	10 00
1⅛	1¼ in.	3 ft. 8 and 10 " 4 2	11 00
1¼	1⅜	3 8 " 10 " 4 2	12 00
1¼	1⅜	3 ft. 2 " 4 2	12 00
1⅜	1½	3 2 " 4 2	13 00

ALL WHITE SECOND GROWTH SPOKES.

TREAD.	SIZE OF SPOKE.	HEIGHT.	PRICE.
¾ in.	⅞ in.	3 ft. 10 and 4 ft. 2 in.	$15 00
⅞	$\frac{15}{16}$ or 1	3 10 " 4 2	15 00
1	1⅛ in.	3 10 " 4 2	15 00
1⅛	1¼	3 ft. 8 and 10 " 4 2	15 00
1¼	1⅜	3 ft. 8 " 4 2	16 00
1¼	1⅜	3 2 " 4 2	16 00

Phaeton Wheels.

MIXED SECOND GROWTH SPOKES.

TREAD.	SIZE OF SPOKE.	HEIGHT.	PRICE.
⅞ in.	1 in.	3 ft. 6 in. and 4 ft.	$10 00
1	1⅛	3 6 " 4	10 00
1⅛	1¼	3 6 " 4	10 00

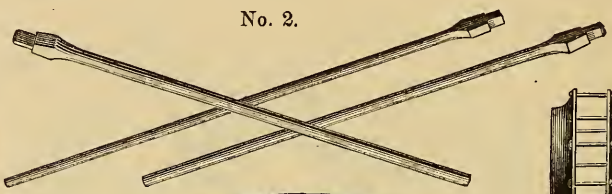
ALL WHITE SECOND GROWTH SPOKES.

TREAD.	SIZE OF SPOKE.	HEIGHT.	PRICE.
⅞ in.	1 in.	3 ft. 6 in. and 4 ft.	$15 00
1	1⅛	3 6 " 4	15 00
1⅛	1¼	3 6 " 4	15 00

SARVEN PATENT WHEELS.

No. 1.

No. 2.



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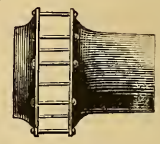
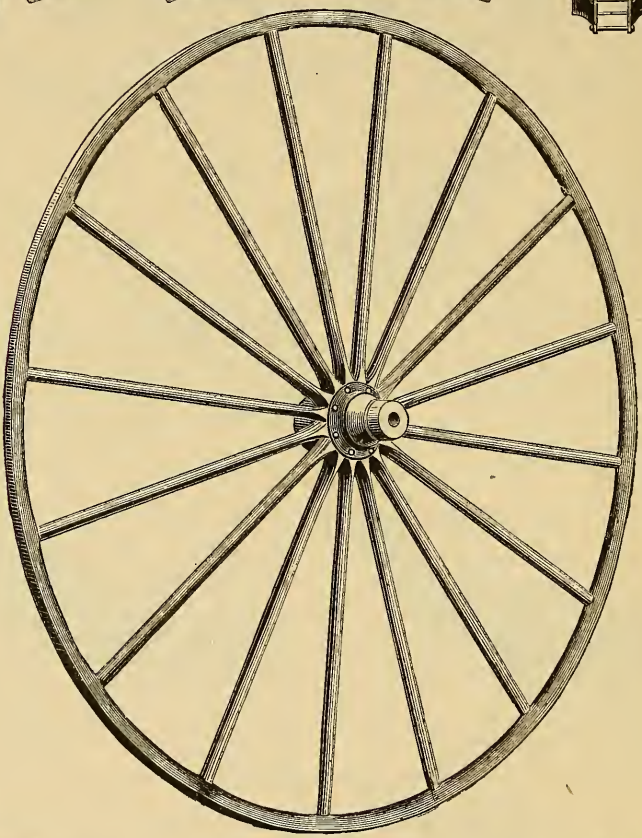
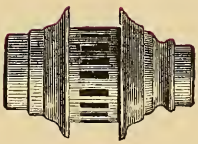
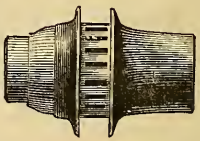






No. 4.

No. 5.



No. 6.

No. 1. Front view of Flange.
2. Spokes finished ready to drive.
3. Side view of Flanges as riveted together.
4. Hub with Flanges partly forced on, ready for Spokes.
5. Mortised Hub of selected timber.
6. Hub with Flanges forced on to their position after the Spokes have been driven.

SARVEN PATENT WHEELS.

PRICE LIST.

No. of Flange.	Diam. of Hub.	Length of Hub.	Depth of Felloe.	Width of Tire.	Size of Spoke.	Height of Front Wheel.	Height of Hind Wheel.	Price per set Sarven A	Price per set Sarven B	Price per set Sarven C
09	2⅜	6	⅞	⅝	¾	3 ft. 8 in.	4 ft.	$20 00	$16 00	$13 00
07	2⅝	6 & 6½	1	¾	¾	3 6	4	20 00	16 00	13 00
05	2¾	6 " 6½	1	¾	13-16	3 10	4 2 in.	20 00	16 00	13 00
03	2⅞	6½	1	¾	⅞	3 11	4 2	20 00	16 00	13 00
01	2 15-16	6½	1 & 1⅛	¾ & ⅞	15-16	3 10 / 3 11	4 2	20 00	16 00	13 00
0	3	6½	1⅛	⅞	1	3 10 / 3 11	4 2	20 00	16 00	13 00
1	3 1-16	6½	1⅛	⅞ & 1	1 1 16	3 10 / 4	4 2	20 00	16 00	13 00
3	3 3-16	6½	1⅛ & 1¼	1	1⅛	3 11 / 4	4 2	20 00	16 00	13 00
5	3 5-16	6½	1⅛ " 1¼	1 & 1⅛	1 3-16	3 8 / 3 10 / 3 6	4 2	20 00	16 00	13 00
7	3 7-16	6½ & 7	1¼ " 1⅜	1 " 1⅛	1 3-16	3 8 / 3 10	4 2	20 00	16 00	13 00
9	3⅝	7	1⅜	1⅛	1¼	3 8 / 3 10	4 2	20 00	16 00	13 00
11	3¾	7 & 7½	1⅜ & 1½	1⅛ & 1¼	1 5-16	3 4 / 3 6	4 2	20 00	16 00	13 00
13	3⅞	7 " 7½	1⅜ " 1½	1¼	1⅜	3 8 / 3 10	4 2	20 00	16 00	13 00
17	4⅛	7½	1½ " 1⅝	1¼	1 7-16	3 4 / 3 6	4 2	28 00	22 00	16 00
21	4 5-16	7½ & 8	1½ " 1⅝	1¼ & 1⅜	1½	3 4 / 3 2	4 2	30 00	23 00	18 00
25	4⅝	8 " 8½	1½ " 1⅝	1¼ " 1⅜	1 9-16	3 4 / 3 6 / 3 2	4 2	31 00	24 00	20 00
29	4¾	8½ " 9	1⅝ " 1¾	1½ " 1⅜	1⅝	3 4 / 3 6	4 2	32 00	25 00	
33	5	8½ " 9	1⅝ " 1¾	1½	1⅝	3 4 / 3 6	4 2	32 00	27 00	
39	5⅝	8½ " 9	1⅝ " 1¾	1½	1¾	3 4 / 3 6	4 2	36 00	28 00	
45	6	9 to 11	1⅞ " 2	1 & 1¾	1⅞	3 2 / 3 4	4 2	40 00	32 00	
51	6⅜	10 " 11	2 " 2¼	1⅝ " 1¾	2⅛	3 6 / 3 8	4 6	45 00		
57	6⅝	10 " 11	2¼ " 2½	1¾	2¼	3 6 / 3 8	4 8	45 00		
63	7	11 " 12	2⅜ " 2½	1¾ & 2	2⅜	3 6	4 8	50 00		
71	7¼	11 " 13	2¼ to 2¾	1¾ to 2	2½	3 2 / 3 8	4 to 4.8	50 00		
73	7¼	11 " 13	2¼ " 2¾	1¾ " 2	2⅝	3 2 / 3 8	4 " 4.8	55 00		
79	7⅝	11 " 14	2¾ " 3	2 " 2¼	2¾	3 4 / 3 8	4 " 4.8	55 00		
85	8¼	12 " 14	2¾ " 2	2 " 2¼	2⅞	3 4 / 3 8	4 " 4.8	60 00		
95	9	12 " 16	3 " 3¼	2 " 2½	3	3 4 / 3 8	4 " 4.8	75 00		
105	9	12 " 16	3 " 3¾	2 " 2⅝	3¼	3 4 / 3 8	4 " 4.8	80 00		

Hose Carriage Wheels, 5 ft. 10 in. or 6 ft. high ..... $50 00 per pair.
Sulky Wheels ..... 15 00 "

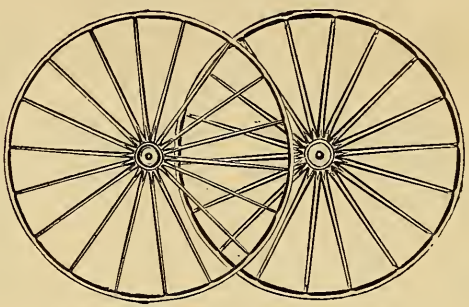
Customers will please order Patent Wheel by number, and be particular to state what price Wheel is wanted.

The number of Flange, diameter of Hub, and size of Spoke, as enumerated in list found above, *cannot be changed.* The length of Hub, depth of Felloe, width of Tire and the height may be changed to any desirable size.

Screws Inserted in Rims at Following Prices:

All Wheels, up to and including No. 39 ..... $1 00 per set.
From No. 39 to 57 ..... 1 50 "
" 57 " 95 ..... 2 00 "

WHEELS.



For Sulkies.

PRICE PER SET.

MIXED SECOND GROWTH SPOKES.

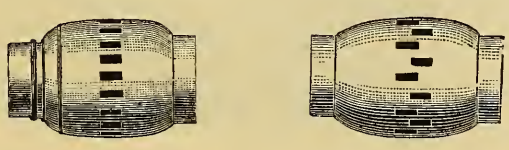
TREAD.	SIZE OF SPOKES.	SIZE OF HUBS.	HEIGHT.	PRICE.
¾ in.	⅞ in.	3¼ × 6 in.	4 ft. 10 in.	$9 00
⅞	1	3¾ or 4 × 6½ or 7	4 10	9 00
1	1 or 1⅛	4 " 4½ × 6½ " 7	4 10	9 00
1⅛	1¼	4½ or 4¾ " 5 × 7	4 10	9 00

ALL WHITE SECOND GROWTH SPOKES.

TREAD.	SIZE OF SPOKES.	SIZE OF HUBS.	HEIGHT.	PRICE.
¾ in.	⅞ in.	3¼ × 6 in.	4 ft. 10 in.	$10 00
⅞	1	3¾ or 4 × 6½ or 7	4 10	10 00
1	1 or 1⅛	4 " 4½ × 6½ " 7	4 10	10 00
1⅛	1¼	4½ or 4¾ " 5 × 7	4 10	10 00

All our Sulky Wheels we have made with Eighteen Spokes, and Full or Part Dodge Mortises.

ELM HUBS.



For Buggies, Carriages, and Express Wagons.

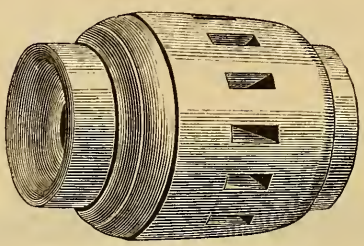
WHITE ELM, SELECTED.

SIZES.		MORTISES.			Spoke Required.	Price Per Set.
Diameter.	Length.	Size.	Number.	Style.		
3 in.	6 and 6½	5/16 × 1 1/16	14 and 16	Full Dodge.	¾ or ⅞ in.	$1 30
3¼	6 " 6½	5/16 × ¾	14 " 16	"	⅞	1 30
3½	6½	5/16 × 1 3/16	14 " 16	"	⅞ " 1	1 30
3¾	6½ and 7	⅜ × 1 3/16	14 " 16	"	1	1 30
4	6½ " 7	⅜ × 1 5/16	14 " 16	"	1	1 30
4¼	6½ " 7	⅜ × 1 5/16	14 " 16	"	1	1 30
4½	6½ " 7	7/16 × 1 1/16	14 " 16	"	1 1/8	1 40
4¾	6½ " 7	7/16 × 1 1/16	14 " 16	Part Dodge.	1 1/8	1 40
5	6½ " 7	½ × 1 3/16	14 " 16	"	1 1/4	1 50
5¼	7 " 7½	½ × 1 3/16	14 " 16	"	1 1/4	1 50
5½	7 " 7½	½ × 1 5/16	14 " 16	"	1 3/8	1 50
5¾	7 " 7½	½ × 1 5/16	14 " 16	"	1 3/8	1 50
6	7½, 8 " 8½	9/16 × 1 3/8	12 " 14	"	1½	1 60
6¼	7½, 8 " 8½	9/16 × 1 3/8	12 " 14	"	1½	1 60
6½	8 " 9	⅝ × 1½	12 " 14	"	1 5/8	1 75
7	9	⅝ × 1 5/8	12 " 14	"	1¾	1 75
7½	9 and 10	11/16 × 1¾	12 " 14	"	2	2 00

FOREST ELM, PAINTED ENDS.

3 in.	6 and 6½	5/16 × 1 1/16	14 and 16	Full Dodge.	¾ or ⅞ in.	$1 00
3¼	6 " 6½	5/16 × ¾	14 " 16	"	⅞	1 00
3½	6½	5/16 × 1 3/16	14 " 16	"	⅞ " 1	1 00
3¾	6½ and 7	⅜ × 1 3/16	14 " 16	"	1	1 00
4	6½ " 7	⅜ × 1 5/16	14 " 16	"	1	1 00
4¼	6½ " 7	⅜ × 1 5/16	14 " 16	"	1	1 00
4½	6½ " 7	7/16 × 1 1/16	14 " 16	"	1 1/8	1 00
4¾	6½ " 7	7/16 × 1 1/16	14 " 16	Part Dodge.	1 1/8	1 00
5	6½ " 7	½ × 1 3/16	14 " 16	"	1 1/4	1 10
5¼	7 " 7½	½ × 1 3/16	14 " 16	"	1 1/4	1 10
5½	7 " 7½	½ × 1 5/16	14 " 16	"	1 3/8	1 20
5¾	7 " 7½	½ × 1 5/16	14 " 16	"	1 3/8	1 20
6	7½, 8 " 8½	9/16 × 1 3/8	12 " 14	"	1½	1 25
6¼	7½, 8 " 8½	9/16 × 1 3/8	12 " 14	"	1½	1 25
6½	8 " 9	⅝ × 1½	12 " 14	"	1 5/8	1 25
7	9	⅝ × 1 5/8	12 " 14	"	1¾	1 30
7½	9 and 10	11/16 × 1¾	12 " 14	"	2	1 30

HUBS.



For Wagons and Carts.

OAK. BEST.

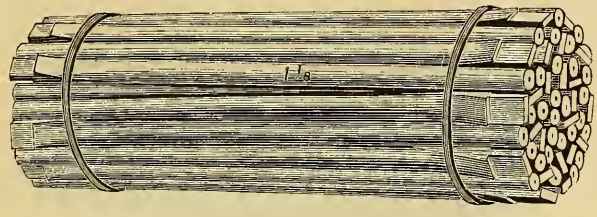
Sizes.		Mortises.			Spoke Required.	Price Per Set.
Diameter.	Lengths.	Size.	Number.	Style.		
6 in.	8 in.	$\frac{9}{16} \times 1\frac{3}{8}$	12 and 14	Part Dodge.	$1\frac{1}{2}$ in.	$1 00
$6\frac{1}{2}$	8 and $8\frac{1}{2}$	$\frac{5}{8} \times 1\frac{1}{2}$	12 " 14	"	$1\frac{5}{8}$	1 00
7	9	$\frac{5}{8} \times 1\frac{5}{8}$	12 " 14	Straight.	$1\frac{3}{4}$	1 25
$7\frac{1}{2}$	9	$\frac{11}{16} \times 1\frac{3}{4}$	12 " 14	"	2	1 25
8	10	$\frac{3}{4} \times 2$	12 " 14	"	$2\frac{1}{8}$	1 25
$8\frac{1}{4}$	10	$\frac{3}{4} \times 2$	12 " 14	"	$2\frac{1}{8}$	1 30
$8\frac{1}{4}$	11	$\frac{13}{16} \times 2\frac{1}{8}$	12 " 14	"	$2\frac{1}{4}$	1 30
$8\frac{1}{2}$	10	$\frac{13}{16} \times 2\frac{1}{8}$	12 " 14	"	$2\frac{1}{4}$	1 30
$8\frac{1}{2}$	11	$\frac{13}{16} \times 2\frac{1}{8}$	12 " 14	"	$2\frac{1}{4}$	1 30
9	11	$\frac{7}{8} \times 2\frac{3}{8}$	12 " 14	"	$2\frac{1}{2}$	1 40
$9\frac{1}{2}$	12	$\frac{7}{8} \times 2\frac{3}{8}$	12 " 14	"	$2\frac{1}{2}$	1 40
$9\frac{3}{4}$	12	$\frac{7}{8} \times 2\frac{3}{8}$	12 " 14	"	$2\frac{1}{2}$	1 50
10	12	$\frac{7}{8} \times 2\frac{5}{8}$	12 " 14	"	$2\frac{3}{4}$ or 3	1 50
$10\frac{1}{2}$	13	1 $\times 2\frac{3}{4}$	12 " 14	"	$2\frac{3}{4}$ " 3	1 75
11	13	1 $\times 2\frac{3}{4}$	12 " 14	"	$2\frac{3}{4}$ " 3	2 00
12	14	1 $\times 2\frac{3}{4}$	12 " 14	"	3 " $3\frac{1}{4}$	2 50

For Sulkies and Gigs.

SELECT WHITE ELM.

Sizes.		Mortises.		Spoke Required.	Price Per Pair.
Diameter.	Lengths.	Size.	Style.		
3 in.	6 and $6\frac{1}{2}$	$\frac{1}{4} \times \frac{5}{8}$	Full Dodge.	$\frac{3}{4}$ or $\frac{7}{8}$ in.	$0 90
$3\frac{1}{4}$	6 " $6\frac{1}{2}$	$\frac{5}{16} \times \frac{3}{4}$	"	$\frac{7}{8}$	90
$3\frac{1}{2}$	6 " $6\frac{1}{2}$	$\frac{5}{16} \times \frac{13}{16}$	"	1	90
$3\frac{3}{4}$	6 " $6\frac{1}{2}$	$\frac{3}{8} \times \frac{13}{16}$	"	1	90
4	6, $6\frac{1}{2}$ " 7	$\frac{3}{8} \times \frac{15}{16}$	"	$1\frac{1}{8}$	90
$4\frac{1}{4}$	$6\frac{1}{2}$ " 7	$\frac{3}{8} \times \frac{15}{16}$	"	$1\frac{1}{8}$	90
$4\frac{1}{2}$	$6\frac{1}{2}$ " 7	$\frac{7}{16} \times 1\frac{1}{16}$	Part Dodge.	$1\frac{1}{4}$	90
5	7 " $7\frac{1}{2}$	$\frac{1}{2} \times 1\frac{3}{16}$	"	$1\frac{3}{8}$	90
$5\frac{1}{2}$	7 " $7\frac{1}{2}$	$\frac{1}{2} \times 1\frac{5}{16}$	"	$1\frac{1}{2}$	1 00
6	8	$\frac{9}{16} \times 1\frac{3}{8}$	"	$1\frac{1}{2}$	1 00
$6\frac{1}{2}$	8	$\frac{5}{8} \times 1\frac{1}{2}$	"	$1\frac{5}{8}$	1 00

SPOKES.



PRICE LIST.

Hickory, for Buggies and Carriages.

SIZE TENON AT SHOULDER.	SIZE SPOKE AT POINT.	FOREST XX.	SELECT OR XXX.	FOREST EXTRA SELECT.		
$\frac{7}{8} \times \frac{7}{16}$	$\frac{3}{4} \times \frac{5}{8}$	$2 00	$2 50	$3 00	per set of	60 Spokes.
$1 \times \frac{3}{8}$	$\frac{13}{16} \times \frac{3}{4}$	2 00	2 50	3 00	"	60 "
$1\frac{1}{8} \times \frac{7}{16}$	$\frac{7}{8} \times \frac{3}{4}$	2 00	2 50	3 00	"	60 "
$1\frac{1}{4} \times \frac{9}{16}$	$1 \times \frac{13}{16}$	2 00	2 50	3 00	"	60 "
$1\frac{3}{8} \times \frac{9}{16}$	$1\frac{1}{8} \times 1$	2 00	2 50	3 00	"	60 "
$1\frac{1}{2} \times \frac{9}{16}$	$1\frac{1}{8} \times 1$	2 00	2 50	3 00	"	52 "
$1\frac{5}{8} \times \frac{11}{16}$	$1\frac{3}{16} \times 1$	2 00	2 50	3 00	"	52 "
$1\frac{3}{4} \times \frac{3}{4}$	$1\frac{1}{4} \times 1$	2 00	2 50	3 00	"	52 "
$2 \times \frac{7}{8}$	$1\frac{1}{4} \times 1\frac{1}{8}$	2 00	2 50	3 00	"	52 "

Mixed Second Growth.

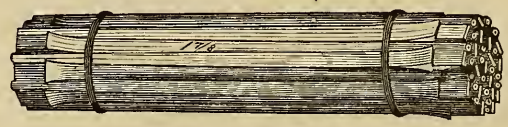
SIZE TENON AT SHOULDER.	SIZE SPOKE AT POINT.			
$\frac{3}{4} \times \frac{5}{16}$	$\frac{11}{16} \times \frac{9}{16}$	$4 25	per set of	60 Spokes.
$\frac{7}{8} \times \frac{7}{16}$	$\frac{3}{4} \times \frac{5}{8}$	4 25	"	60 "
$1 \times \frac{3}{8}$	$\frac{13}{16} \times \frac{3}{4}$	4 25	"	60 "
$1\frac{1}{8} \times \frac{7}{16}$	$\frac{7}{8} \times \frac{3}{4}$	4 25	"	60 "
$1\frac{1}{4} \times \frac{9}{16}$	$1 \times \frac{13}{16}$	4 25	"	60 "
$1\frac{3}{8} \times \frac{9}{16}$	$1\frac{1}{8} \times 1$	4 25	"	60 "
$1\frac{1}{2} \times \frac{9}{16}$	$1\frac{1}{8} \times 1$	4 25	"	52 "
$1\frac{5}{8} \times \frac{11}{16}$	$1\frac{3}{16} \times 1\frac{1}{16}$	4 50	"	52 "
$1\frac{3}{4} \times \frac{3}{4}$	$1\frac{1}{4} \times 1$	4 75	"	52 "

All White Second Growth.

SIZE TENON AT SHOULDER.	SIZE SPOKE AT POINT.			
$\frac{3}{4} \times \frac{5}{16}$	$\frac{11}{16} \times \frac{9}{16}$	$5 50	per set of	60 Spokes.
$\frac{7}{8} \times \frac{7}{16}$	$\frac{3}{4} \times \frac{5}{8}$	5 50	"	60 "
$1 \times \frac{3}{8}$	$\frac{13}{16} \times \frac{3}{4}$	5 50	"	60 "
$1\frac{1}{8} \times \frac{7}{16}$	$\frac{7}{8} \times \frac{3}{4}$	5 50	"	60 "
$1\frac{1}{4} \times \frac{9}{16}$	$1 \times \frac{13}{16}$	5 50	"	60 "
$1\frac{3}{8} \times \frac{9}{16}$	$1\frac{1}{8} \times 1$	5 50	"	60 "
$1\frac{1}{2} \times \frac{9}{16}$	$1\frac{1}{8} \times 1$	5 50	"	52 "
$1\frac{5}{8} \times \frac{11}{16}$	$1\frac{3}{16} \times 1\frac{1}{16}$	5 75	"	52 "
$1\frac{3}{4} \times \frac{3}{4}$	$1\frac{1}{4} \times 1$	6 00	"	52 "

All Buggy Spokes are 26½ in. long.

SPOKES.



For Sulkies and Gigs.

PRICE LIST.

Select Forest Hickory.

SIZE TENON AT SHOULDER.	SIZE SPOKE AT POINT.				
$\frac{15}{16} \times \frac{3}{8}$	$\frac{5}{8} \times \frac{11}{16}$	$2 00	per set of	36	Spokes.
$1\frac{1}{16} \times \frac{3}{8}$	$\frac{3}{4} \times \frac{11}{16}$	2 00	"	36	"
$1\frac{3}{16} \times \frac{1}{2}$	$\frac{3}{4} \times \frac{7}{8}$	2 00	"	36	"
$1\frac{5}{16} \times \frac{1}{2}$	$\frac{15}{16} \times \frac{7}{8}$	2 00	"	36	"
$1\frac{3}{8} \times \frac{9}{16}$	$1\frac{1}{16} \times \frac{9}{16}$	2 00	"	36	"
$1\frac{1}{2} \times \frac{9}{16}$	$1\frac{3}{16} \times \frac{9}{16}$	2 00	"	36	"

Mixed Second Growth Hickory.

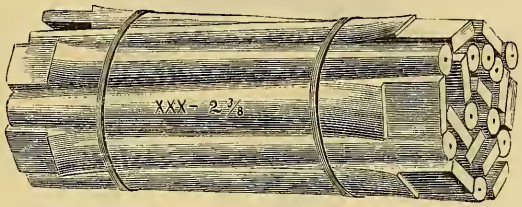
SIZE TENON AT SHOULDER.	SIZE SPOKE AT POINT.				
$\frac{15}{16} \times \frac{3}{8}$	$\frac{5}{8} \times \frac{11}{16}$	$3 00	per set of	36	Spokes.
$1\frac{1}{16} \times \frac{3}{8}$	$\frac{3}{4} \times \frac{11}{16}$	3 00	"	36	"
$1\frac{3}{16} \times \frac{1}{2}$	$\frac{3}{4} \times \frac{7}{8}$	3 00	"	36	"
$1\frac{5}{16} \times \frac{1}{2}$	$\frac{15}{16} \times \frac{7}{8}$	3 00	"	36	"
$1\frac{3}{8} \times \frac{9}{16}$	$1\frac{1}{16} \times \frac{9}{16}$	3 00	"	36	"
$1\frac{1}{2} \times \frac{9}{16}$	$1\frac{3}{16} \times \frac{9}{16}$	3 00	"	36	"

All White Second Growth Hickory.

SIZE TENON AT SHOULDER.	SIZE SPOKE AT POINT.				
$\frac{15}{16} \times \frac{3}{8}$	$\frac{5}{8} \times \frac{11}{16}$	$3 50	per set of	36	Spokes.
$1\frac{1}{16} \times \frac{3}{8}$	$\frac{3}{4} \times \frac{11}{16}$	3 50	"	36	"
$1\frac{3}{16} \times \frac{1}{2}$	$\frac{3}{4} \times \frac{7}{8}$	3 50	"	36	"
$1\frac{5}{16} \times \frac{1}{2}$	$\frac{15}{16} \times \frac{7}{8}$	3 50	"	36	"
$1\frac{3}{8} \times \frac{9}{16}$	$1\frac{1}{16} \times \frac{9}{16}$	3 50	"	36	"
$1\frac{1}{2} \times \frac{9}{16}$	$1\frac{3}{16} \times \frac{9}{16}$	3 50	"	36	"

Our Sulky Spokes are 29 in. long, and will make a Wheel 5 feet high if desired, and are thoroughly seasoned.

SPOKES.



Oak, for Wagons and Carts.

PRICE PER SET.

Forest.

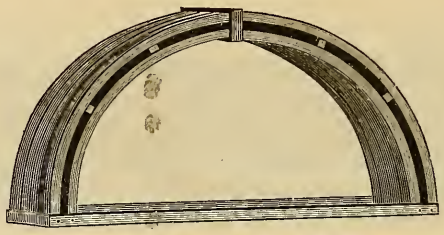
SIZE SPOKE.	SIZE TENON AT SHOULDER.	SIZE SPOKE AT POINT.	XX.	STAR.	SELECT XXX.	EXTRA SELECT.
1¾ in.	1¾ × ¾ in.	1¼ × 1 in.	$2 00	$0 00	$3 00	$3 75
2	2 × ⅞	1¼ × 1⅛	2 00	2 50	3 00	3 75
2⅛	2 3/16 × ¾	1 5/16 × 1 3/16	2 00	2 50	3 00	3 75
2¼	2 5/16 × 13/16	1 5/16 × 1 3/16	2 00	2 50	3 00	2 75
2⅜	2 7/16 × 15/16	1⅜ × 1¼	2 00	2 50	3 00	3 75
2½	2 9/16 × 15/16	1½ × 1 5/16	2 00	2 50	3 00	3 75
2⅝	2 11/16 × 1	1⅝ × 1½	2 25	2 75	3 25	4 00
2¾	2¾ × 1	1⅝ × 1½	2 50	3 00	3 50	4 25
3	3 1/16 × 1 1/16	1⅝ × 1½	2 75	3 25	3 75	4 50
3¼	3¼ × 1 1/16	2 1/16 × 1⅛			4 50	5 50
3½	3½ × 1¼	2 5/16 × 1¾			5 00	6 50

Second Growth Oak.

SIZE SPOKE.	SIZE TENON AT SHOULDER.	SIZE SPOKE AT POINT.	SELECT.	EXTRA SELECT.
1¾ in.	1¾ × ¾ in.	1¼ × 1 in.	$4 50	$5 50
2	2 × ⅞	1¼ × 1⅛	4 50	5 50
2⅛	2 3/16 × ¾	1 5/16 × 1 3/16	4 50	5 50
2¼	2 5/16 × 13/16	1 5/16 × 1 3/16	4 50	5 50
2⅜	2 7/16 × 15/16	1⅜ × 1¼	4 50	5 50
2½	2 9/16 × 15/16	1½ × 1 5/16	4 50	5 50
2⅝	2 11/16 × 1	1⅝ × 1½	4 75	5 75
2¾	2¾ × 1	1⅝ × 1½	5 00	6 00
3	3 1/16 × 1 1/16	1⅝ × 1½	5 50	6 50

Total length of Front Spokes, 23 in. Total length of Hind Spokes, 27 in.

BENT FELLOES.



For Carriage Wheels.

EIGHT PIECES MAKE A SET FOR FOUR WHEELS.

PRICE PER SET.

FIRST GROWTH HICKORY.				BLACK HICKORY.			
Size.	Diameter. Front.	Diameter. Hind.	Price.	Size.	Diameter. Front.	Diameter. Hind.	Price.
1 in. sqr.	3 ft. 10 in.	4 ft. 2 in.	$1 00	1 in. sqr.	3 ft. 10 in.	4 ft. 2 in.	$1 50
1⅛ "	3 10	4 2	1 10	1⅛ "	3 10	4 2	1 60
1¼ "	3 10	4 2	1 20	1¼ "	3 10	4 2	1 75
1⅜ "	3 10	4 2	1 30	1⅜ "	3 10	4 2	1 85
1½ "	3 10	4 2	1 40	1½ "	3 10	4 2	2 00
1⅝ "	3 7	4 1	1 75	1⅝ "	3 7	4 1	2 50
1⅝ "	3 8	4 2	1 75	1⅝ "	3 8	4 2	2 50
1¾ "	3 7	4 1	2 00	1¾ "	3 7	4 1	3 00
1¾ "	3 8	4 2	2 00	1¾ "	3 8	4 2	3 00

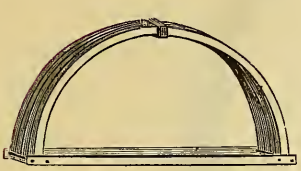
Phaeton Felloes.

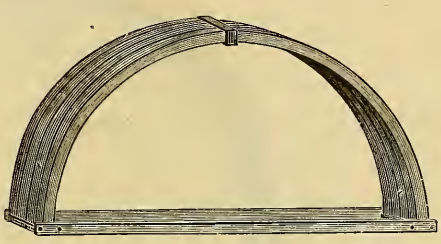
HICKORY.

1	in. square,	3	ft.	6	in. front,	and	4	ft. hind	$1 00 per set.
1⅛	"	3		6	"	"	4	"	1 10 "
1¼	"	3		6	"	"	4	"	1 20 "
1⅜	"	3		6	"	"	4	"	1 30 "

Our Bent Felloes are manufactured for us, from the best selected timber, put up in full sets of eight pieces in a bundle, in good shipping order. As a rule, we keep stock on hand large enough to have them thoroughly seasoned for the trade.

BENT FELLOES.





Hickory and Oak, for Express Wagons.

SIZE.	DIAMETER.		PRICE PER SET.
1½ in. Square	3 ft. 2 in. × 4 ft. 2 in.	Hickory	$1 40
1⅝ "	3 2 × 4 2	Oak	1 60
1¾ "	3 2 × 4 2	"	1 70
2 "	3 2 × 4 2	"	2 00
2¼ "	3 2 × 4 2	"	2 40

For Wagons.

SIZE.	DIAMETER.		PRICE PER SET.
1⅝ in. Square	3 ft. 8 in. × 4 ft. 6 in.	Oak	$1 60
1¾ "	3 8 × 4 6	"	1 75
1¾ × 2 "	3 8 × 4 6	"	2 00
1¾ × 2¼ "	3 8 × 4 6	"	2 40
2 × 2¼ "	3 8 × 4 6	"	2 50

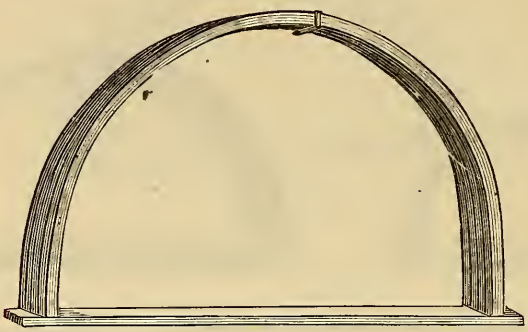
For Trucks.

BENT TO ANY SIZE AND HEIGHT REQUIRED.

SIZE.	PRICE PER SET.
2¼ in. Tread, 2 in. deep	$4 00
2½ " 2 "	4 75
3 " 2 "	5 50
3½ " 2 "	6 50
4 " 2 "	7 50
6 " 2 "	10 00

Our Express Wagon and Truck Felloes are all made from selected timber, put up in first-class shipping order, and can generally fill orders with well-seasoned stock.

BENT FELLOES.



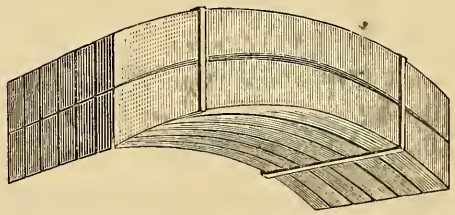
For Sulkies, Gigs, and Carts.

PRICE PER SET FOR TWO WHEELS.

SIZE.			DIAMETER.				
1	in. Square.	Sulky	4 ft.	10 in.	Hickory		$1 00
1⅛	"	"	4	10	"		1 00
1¼	"	"	4	10	"		1 10
1⅜	"	"	4	10	"		1 20
1½	"	"	4	10	"		2 25

Cart Felloes are not kept in stock, but can furnish any size or height to order.

SAWED FELLOES.



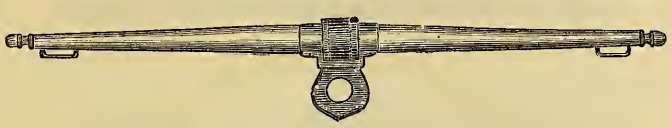
Oak, for Heavy Wagons and Carts.

TWENTY-SIX PIECES TO A SET.

TREAD.	DEPTH.	COMMON.	SELECT.
1¾ in.	2¼ in.	$1 30	$1 50 per set.
1¾	2½	1 30	1 50 "
2	2½	1 30	1 50 "
2	2⅝	1 30	1 50 "
2	2¾	1 50	1 75 "
2	3	2 00	2 25 "
2¼	3	2 25	2 50 "
2½	3	3 00	3 50 "
2½	3½	4 00	4 50 "

All of above sizes to 2¼ × 3 in., kept in stock, and seasoned. Larger sizes sawed to order from thoroughly seasoned plank.

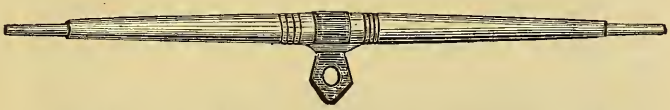
NECK YOKES.



No. 1. Buggy. Old Style, Leather Center.

Express	Yoke,	Acorn	End,	Heavy	$14 50 per dozen.
"	"	"	"	Light	14 50 "
Carriage	"	"	"	Heavy	13 00 "
"	"	"	"	Medium	13 00 "
Buggy	"	"	"	Light	13 00 "

Styles same as above, with plain ends, $1 00 per dozen less.

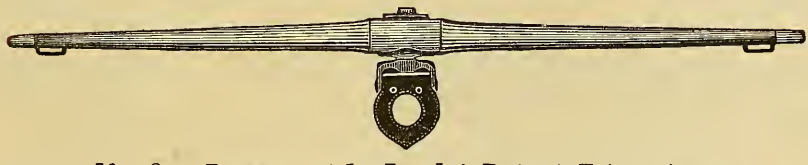


No. 2. Buggy. Old Style, Leather Center.

The ends are left as shown in the Cut, so that they can be Tipped with such styles as may be desired by parties ordering them as per List below.

Numbers as per Catalogue.

Tip	No.								
Tip	No. 1200.	Silver	¾ in.,	$23 50	⅞ in.,	$24 00	1 in.,	$27 00	per dozen.
"	1200.	Oroide	¾	23 50	⅞	24 00	1	27 00	"
"	1200.	Gold	¾	27 50	⅞	28 00	1	32 00	"
"	1250.	Silver	¾	33 00	⅞	34 00	1	37 00	"
"	1250.	Oroide	¾	33 00	⅞	34 00	1	37 00	"
"	1250.	Gold	¾	39 00	⅞	40 00	1	43 00	"
"	1500.	Silver	¾	22 50	⅞	23 00	1	26 00	"
"	1500.	Oroide	¾	22 50	⅞	23 00	1	26 00	"
"	1500.	Gold	¾	26 50	⅞	27 00	1	31 00	"
"	1550.	Silver	¾	22 50	⅞	23 00	1	26 00	"
"	1550.	Oroide	¾	22 50	⅞	23 00	1	26 00	"
"	1550.	Gold	¾	26 50	⅞	27 00	1	31 00	"



No. 3. Buggy, with Jacobs' Patent Trimmings.

Numbers as per Catalogue.

Tip	No.				
Tip	No. 100.	Silver.	Express, Heavy	$17 50	per dozen.
"	100.	"	" Light	17 50	"
"	100.	"	Carriage, Heavy	16 50	"
"	100.	"	" Medium	16 50	"
"	100.	"	Buggy, Light	16 50	"
"	200.	"	Same as above, add	50	"
"	250.	"	" " "	1 00	"
"	300.	"	" " "	5 50	"

All Painted Yokes, either style, $3 00 per dozen, extra.

NECK YOKES.

Buggy.

FINISHED WITH MOORE'S PATENT TRIMMINGS.

Numbers as per Catalogue.

Tip No. 100.	Silver, Plain	$27 00	per dozen.
" 100.	Oroide, "	27 00	"
" 100.	Gold, "	33 00	"
" 200.	Silver, Ball	30 00	"
" 200.	Oroide, "	30 00	"
" 200.	Gold, "	36 00	"
" 300.	Silver, Octagon	38 00	"
" 300.	Oroide, "	38 00	"
" 300.	Gold, "	44 00	"

Buggy.

WITHOUT TIPS OR TRIMMINGS.

Hickory,	Forest Timber, 38, 40 and 42 in. long	$2 00	per dozen.
"	Second Growth Timber, 38, 40 and 42 in. long	3 50	"
Ash,	" " " 38, 40 " 42 "	4 00	"

Express.

Hickory,	Forest Timber, 40 in. long	$2 25	per dozen.
"	Second Growth Timber, 40 in. long	3 50	"
Ash	" " " 40 "	4 00	"

Wagon.

Hickory,	Forest Timber, 36 and 38 in. long	$1 40	per dozen.
"	" " 48 in. long	3 00	"
"	Second Growth Timber, 36 and 38 in. long	3 50	"
Ash	" " " 36 " 38 "	3 50	"
"	" " " 48 in. long	5 00	"

SINGLETREES.

Wagon—Round.

Hickory, Forest Timber	$1 40	per dozen.
" Second Growth, 2½ in. Center	3 50	"
" " " 2¾ "	4 00	"
Ash " "	4 00	"

Wagon—Oval.

Hickory, Forest Timber	$1 40	per dozen.
" Second Growth	3 50	"
Ash " "	4 00	"

Buggy.

Hickory, Forest Timber	$2 00	per dozen.
" Second Growth	3 00	"
Ash " "	3 50	"

Express.

Hickory, Forest Timber, 2 in.	$2 25	per dozen.
" Second Growth, 2	3 50	"
Ash " " 2	4 00	"

EVENERS.

Wagon—Finished.

4 ft., Narrow Track	$2 75	per dozen.
4 " 4 in. wide "	3 00	"

Buggy—Finished.

BREWSTER PATTERN.

4 ft. long, Forest Timber	$2 75	per dozen.
4 " " Carriage	2 75	"
4 " " Second Growth Hickory	5 00	"
4 " " " " Ash	4 00	"

Buggy—Finished.

ORDINARY PATTERN.

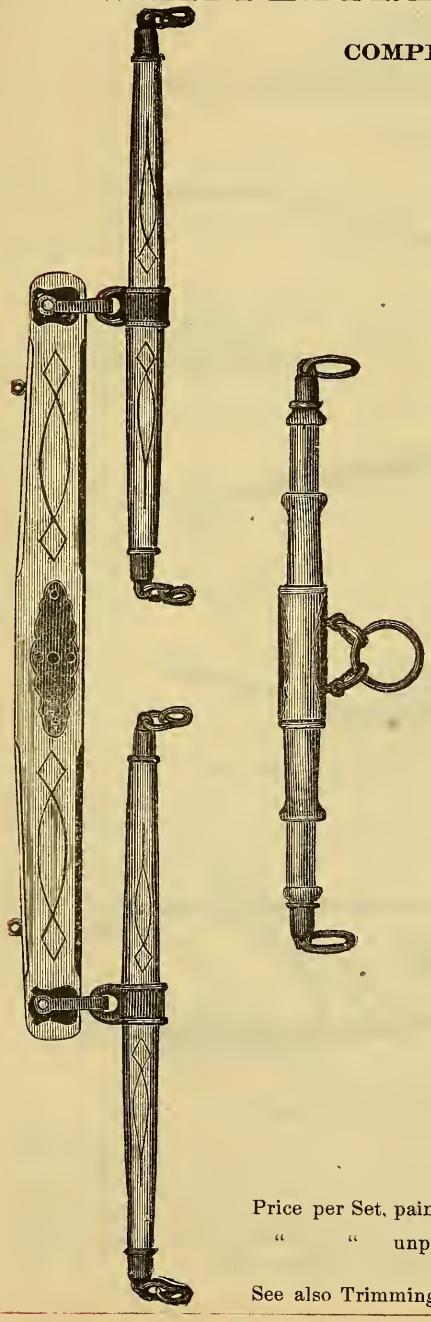
4 ft. long, Forest Timber	$2 75	per dozen.
4 " " Carriage	2 75	"
4 " " Second Growth Hickory	4 50	"
4 " " " " Ash	4 00	"

Express.

4 ft. long, Forest Timber	$2 75	per dozen.
4 " " Second Growth Hickory	3 50	"
4 " " " " Ash	4 00	"

NECK-YOKE, EVENER, AND WHIFFLETREES, IRONED,

COMPLETE.



The cuts represented on this and the preceding page are improvements in Whiffletree and Neck-Yoke Irons, and consist in the construction of the Ferrules or Caps, the Rings and Hooks and Evener Shields for Wagon Whiffletrees and Neck Yokes, and other vehicles.

The improvement is in casting the Rings and Hooks into the Lugs or Eyes of the Ferrules instead of welding them in as is usually done when wrought-iron is used.

They are made of the best malleable iron, perfect in finish and shape, and more durable than wrought-iron on account of having a harder surface for wear, and equally as strong.

These trimmings are coming into general use by all manufacturers of wagons and agricultural implements, and will supersede the wrought-iron hooks and rings for the purposes designed.

All the ordinary sizes for wagon whiffletrees and neck-yokes and agricultural work can be furnished and will be kept constantly in stock.

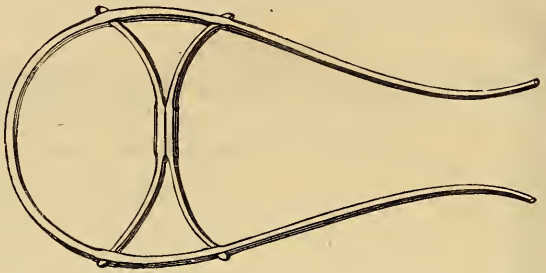
Also the whiffletree and neck-yokes ready ironed will be furnished in sets.

S. D. KIMBARK, MANUFACTURER AND SOLE AGENT.

Price per Set, painted $5 00
" " unpainted 4 50

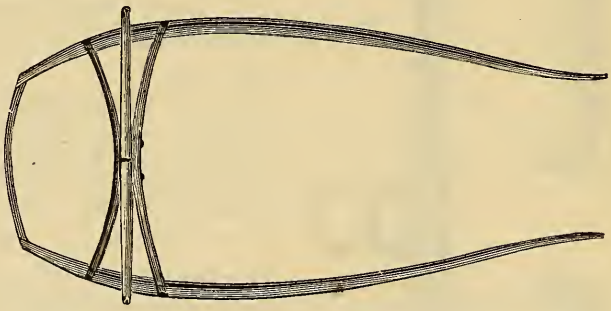
See also Trimmings in Malleable Iron, pages 780 and 781.

SULKY GEARINGS.



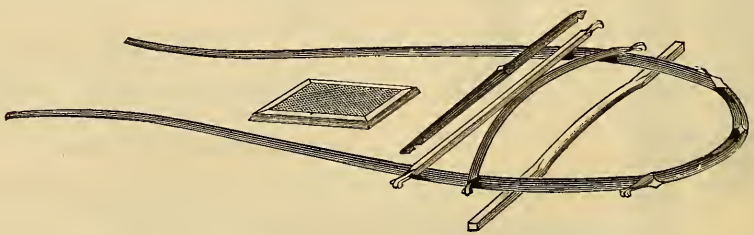
No. 1. Round Back.

Finished Gearing, plain	$5 00 per set.
Unfinished Circle Back Shafts	2 00 "
Second Growth Ash	2 25 "



No. 2. Straight Back—Second Growth Ash.

Finished Gearing, plain	$6 50 per set.
Unfinished Straight Back Shafts	1 50 per set.



No. 3. Finely Finished.

Without Seat	$6 50 per set.
With Seat, complete	8 00 "

All the above patterns can be furnished with Seat or without Seat, and being manufactured for us, can be furnished either of Hickory or Ash—best selected timber. Either pattern is suitable for road or trotting sulky.

GEARINGS IN PARTS.

No. 1. For Three Springs.

No. 1.	Forest Timber, Extra	$3 80	per set.
1.	Second Growth, "	4 50	"

No. 2. Plain.

No. 3. Scrolled.

			FOREST.	SECOND GROWTH.	
No. 2.	Single Reach,	1¼ in. Axle or less	$2 85	$4 35	per set.
2.	Concord Gearing,	1¼ " "	3 30	4 80	"
3.	Plain Finish,	1¼ " "	3 25	4 75	"
3.	Full Carved,	1¼ " "	5 90	7 40	"
3.	Two Pieces Carved,	1¼ " "	5 00	6 50	"

No. 4. Full Carved.

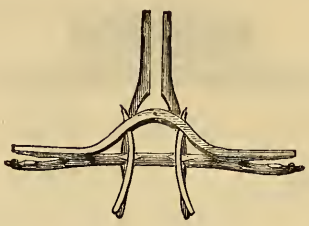
No. 4.	Single Reach,	1¼ in. Axle or less	Forest,	$5 50	per set.
4.	Two Pieces Carved,	1¼ " "	"	4 60	"
4.	Single Reach,	1¼ " "	Second Growth,	7 00	"
4.	Two Pieces Carved,	1¼ " "	" "	6 10	"

No. 5. Phaeton.

No. 6. Phaeton.

No. 5.	Two Spring	Forest,	$6 00	per set.
5.	" "	Second Growth,	8 00	"
6.	Three "	Forest,	8 00	"
6.	" "	Second Growth,	10 00	"

PLATFORM CARRIAGE PARTS.



Close-Sawed Futchell—Finished.

As shown in above Cut, for Stiff Pole		$12 00	per set.
With Draw-bar furnished	extra,	1 50	"
Finished with Sunken Corner Heads	"	2 00	"

In ordering, give the width outside of body at the forward end above the C. part. Also the distance outside to outside of Springs on Forward Axle. Also state what kind and size of Carriage, whether light or heavy; so that the Carriage parts can be furnished in proportion.

Open Bent Futchell—C. Part.

As shown in above Cut		$14 00	per set.
With Draw-bar furnished	extra,	1 50	"

Above is for Drop Pole or Shafts, and may be used for Stiff Pole by supplying a draw-bar to the middle of which an iron socket is attached, through which the pole slips into another socket at the back end of the pole. The Draw-bar is held to its place by blocks which are bolted into the shaft shackles. The Bar can be removed when Shafts or Drop Pole are used. It is suitable for any Carriage, either one or two horses, by making the Carriage parts to correspond.

Iron Shackle—C. Part.

For usual style		$10 00 per set.

For Drop Pole or Shafts, by attaching to the C. part by iron shackles which reach forward from the Clips to which the Springs are attached. Are generally used for Cabriolets, Rockaways, Phaetons, and lighter Carriages.

BENT CARRIAGE PARTS.

Bent Futchells, in Rough.

Ash, 1¼ in. thick	$15 00	per dozen pairs.
" 1⅜ "	16 50	" "
" 1½ "	18 00	" "
" 1⅝ "	21 00	" "

These are for Platform Carriage Parts, called Open Futchells, for drop poles ; are usually bent 3 in. wide and sawed apart, one piece making a pair of perfect mates.

Bent Back Bars, in Rough.

1	in. thick, 5	in. wide,	4 ft. long		$15 00	per dozen.
1¼	" 5½	"	4 " 2 in.	long	16 50	"
1½	" 6	"	4 " 6	"	18 00	"

Above are for connecting the back springs of Landaus, Clarences, Cabriolets, Phaetons, etc., that have two springs behind, are bent with an upward curve, and are cut to the shape vertically, making them superior to those sawed from thick plank, and are made from second growth ash. Should it be desired to have them cut to shape, in ordering, give the length of the part you wish cut out, and the length outside of springs if possible. It being uncertain as to what length they may be needed, it is best to have them sent *not cut to the shape,* but to shape them after they are fitted to the springs and body loops.

Finished Back Bars.

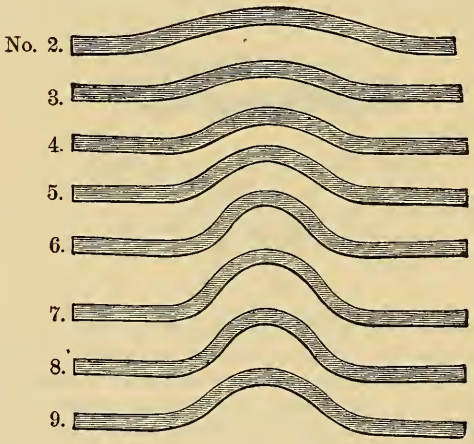
Price ..... from $4 00 to 6 00 each.

For connecting the back springs of platform and other C parts. In ordering always give the distance from outside to outside of springs on the hind axles, the width outside to outside of body loops or pump handles at back, and whether they want to be raised or straight in the center.

BENT COACH BEDS.

For Platform Carriage Parts.

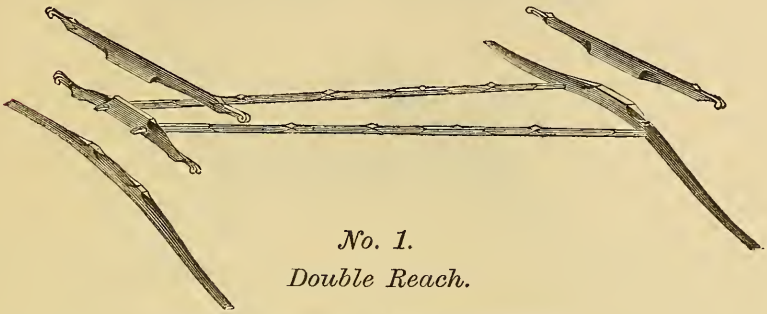
Ash,	second	growth	1¾	in. thick	2	in. deep	$13 00	per	dozen.
"	"	"	1¾	"	2½	"	16 00	"	
"	"	"	1¾	"	3	"	19 00	"	
"	"	"	1¾	"	3½	"	22 00	"	
"	"	"	1¾	"	4	"	25 00	"	



No. 2	is	curved	3	in.	out of a	straight line.
3	"	"	3	"	"	"
4	"	"	4	"	"	"
5	"	"	5	"	"	"
6	"	"	6	"	"	"
7	"	"	7	"	"	"
8	"	"	6	"	"	"
9	"	"	6	"	"	"

Above cuts represent regular patterns of Bent Coach Beds, only in reduced proportions of half an inch to a foot, and can be ordered and furnished by the numbers so far as the shape is concerned; but in addition to giving the number, also state the depth or thickness desired. Other shapes can be furnished by representing them by diagram, with the dimensions thereon.

FINISHED GEARING.

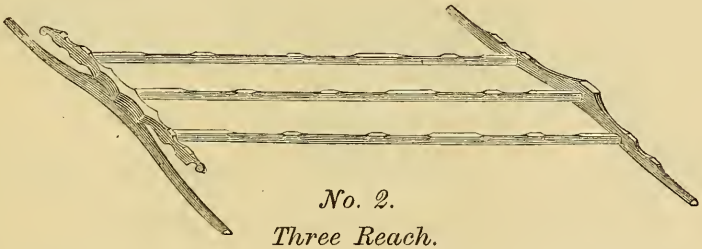


No. 1.

Double Reach.

Can also furnish above with Single Reach.

Single Reach, Spring Bars and Bed complete	$4 00	per set.
Double " " " " "	4 50	"
Second Growth Timber	extra, 2 00	"

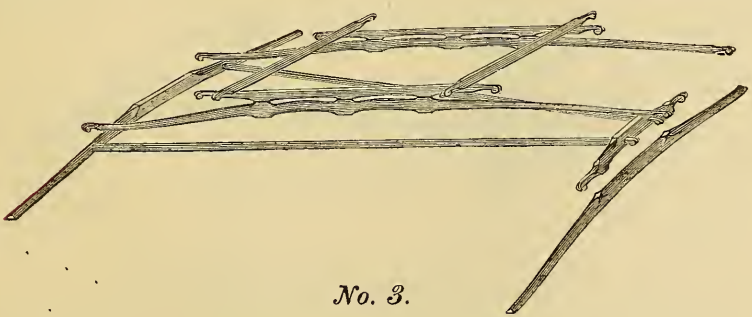


No. 2.

Three Reach.

Above are used for Concord Buggies, also for Light Express Wagons.

Plain Finish	$3 50	per set.
Extra Fine Finish	4 50	"
" " " Second Growth	6 00	"



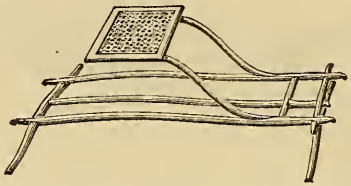
No. 3.

Side Spar, Double Reach.

Above can be used for Road Wagons or Light Trotting Wagons.

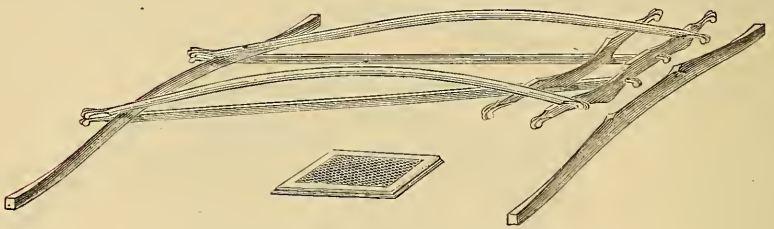
All complete	$8 00 to 10 00 per set.

FINISHED GEARING.



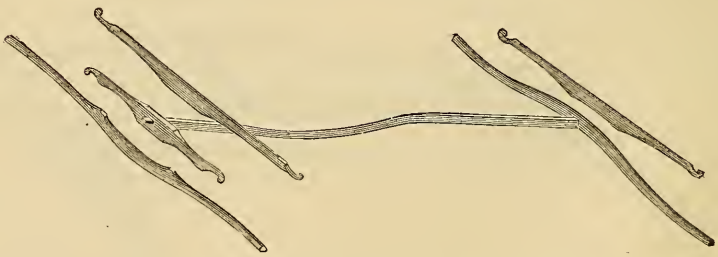
No. 4. Ordinary Skeleton Gearing.

Hickory, finished with Caned Seat ..... $14 00 per set.



No. 5. New Style Skeleton Gearing.

Extra Finish ..... $18 00 per set.
Plain " ..... 15 00 "



No. 6. Buggy or Phaeton Gearing.

Has crooked Reach, with Head Block and Spring Bars finished ready for use.

Finely Finished, complete ..... $8 00 per set.

FINISHED GEARING.

No. 7. Pony Phaeton Gearing.

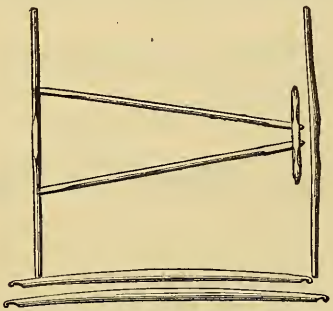
Hickory, Common Timber	$5 00	per set.
" Selected "	6 00	"

Above has bent Reach for Drop-front Phaeton bodies, the back end of the Reach unfinished, and the ends of the Spring-bars are unfinished.

No. 8. Buggy Gearing—C. Parts.

For 1¼ in. Springs, Common Timber	$4 00	per set.
" 1¼ " Selected "	4 50	"
" 1½ " Common "	4 50	"
" 1½ " Selected "	5 00	"

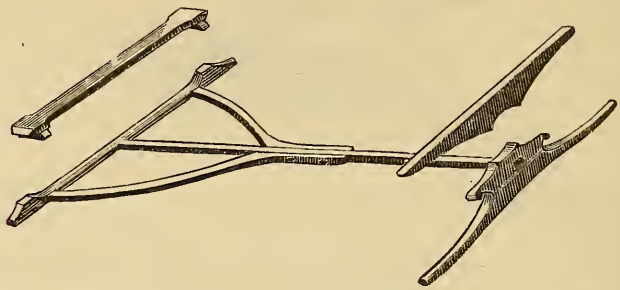
Above includes the following for one Set: 1 Forward and 1 Hind Axle Bed, 1 Head Block, finished, 1 Reach and 2 Spring Bars unfinished, the Axle Beds being Arched Gothic style. If desired with back Bed and back Spring Bar carved, add from $1 00 to $2 00 per set according to finish. If desired with two Reaches add 50 cents per set.



No. 9. Ordinary Side Spar Gearing.

Hickory, with Double Reaches and Hickory Side Spars—C. part finished	$12 00	per set.

FINISHED GEARING.



No. 10. Express Wagon Gearing.

Finished, complete ..... $8 00 per set.

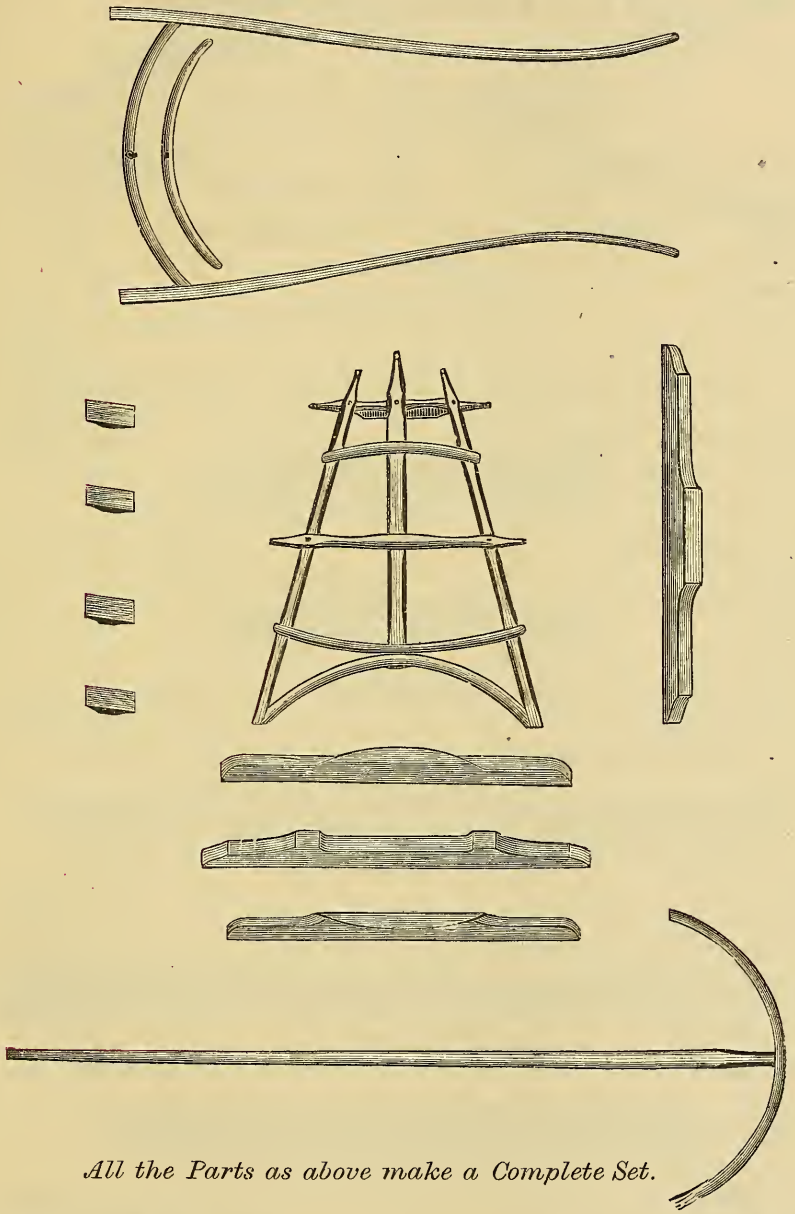
No. 11. Grocery Wagon Gearing.

Single Reach and two Spring Bars,					common	$6 00	per set.
"	"	"	"	"	select	6 75	"
Double	"	"	"	"	common	7 00	"
"	"	"	"	"	select	7 75	"

No. 12. Bent Reaches.

1	in. thick,	Forest,	for	Drop-front	Phaetons	$6 00 per dozen.
1	"	Select	"	"	"	9 00 "
1¼	"	Forest	"	Cabriolet		13 50 "
1¼	"	Select	"	"		18 00 "

FINISHED PLATFORM GEARING.



All the Parts as above make a Complete Set.

One Set complete, with Shafts	$8 00
" " " Pole	8 00
" " " Shafts and Pole	10 00

UNFINISHED GEARINGS.

Parts for Wagon, in the Rough.

4 Wagon Stakes.	Oak	$0 15	per set.
2 Hind Hawns.	" Sawed	30	per pair.
2 Front "	" "	30	"
2 Tongue "	" "	30	"
1 Sway Bar	" "	15	each.

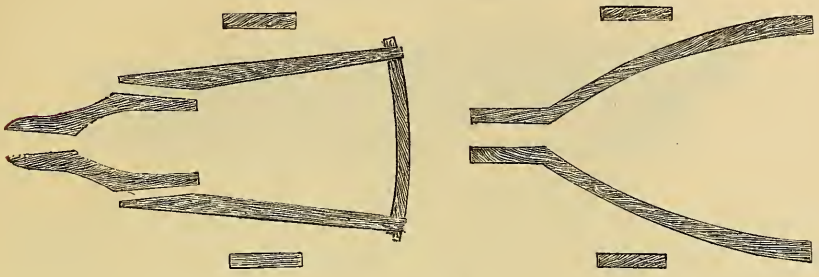
Unfinished Buggy Gearing, in Rough—Second Growth.

Bent Axle Beds.	Hickory	$1 00	per pair.
Straight Axle Beds. "	2 in.	30	each.
" " " "	3	40	"
" " " "	4	60	"
Single Reaches		30	"
Shaft Bars		30	"
Spring "		25	"
Head Blocks		25	"
A Set of 6 pieces, as follows: 2 Axle Beds, 1 Reach, 2 Spring Bars, 1 Head Block		2 00	per set.
Add 1 Shaft Bar for 7 pieces		2 25	"

Unfinished Buggy Gearing, in Rough—Forest Timber.

Bent Axle Beds.	Hickory	$0 50	per pair.
Straight Axle Beds. "	2 in.	25	each.
" " " "	3	25	"
" " " "	4	30	"
Single Reaches "		15	"
Shaft Bars "		20	"
Spring " "		15	"
Head Blocks "		10	"
A Set of 6 pieces, as follows: 2 Axle Beds, 1 Reach, 2 Spring Bars, 1 Head Block		1 25	per set.
Add 1 Shaft Bar for 7 pieces		1 50	"

WAGON GEARING.



Oak—Rough.

Consisting of the following:

2 Tongues Hawns or Braces
2 Front " " "
2 Hind " or Reach Braces
1 Sway Bar
4 Stakes

} Eleven pieces ..... $1 25 per set.

Oak Sand Boards—Rough.

Sizes: 2 × 4 × 4 feet ..... 20 cents each.
" 3 × 4 × 4 " ..... 25 " "

Oak Bolsters—Rough.

Sizes: 3 × 4 × 4 feet ..... 25 cents each.
" 3½ × 4½ × 4 " ..... 30 " "
" 3½ × 5 × 4 " ..... 40 " "
" 4 × 5 × 4 " ..... 50 " "

Oak Reach—Rough.

Sizes: 2 × 4 × 8 feet ..... 30 cents each.
" 2 × 4 × 10 " ..... 40 " "
" 2 × 4 × 12 " ..... 50 " "

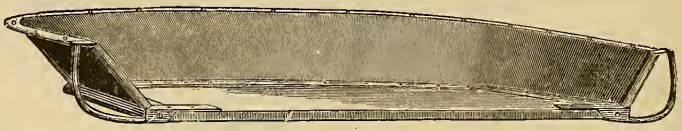
Ash Tongue—Rough.

Size: 2 × 4 × 4 × 4 × 12 feet ..... 75 cents each.

Hickory Axle—Rough.

Sixes: 3 × 4 × 6 feet ..... $1 25 per pair.
" 3½ × 4½ × 6 " ..... 1 50 "
" 4 × 5 × 6 " ..... 1 75 "
" 4 × 6 × 6 " ..... 2 00 "

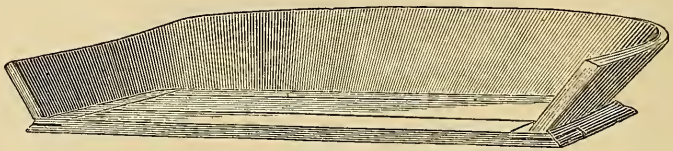
BUGGY SEATS.



Graham's Patent Sheet Iron Seat.

Measure from outside to outside on bottom, to get size.

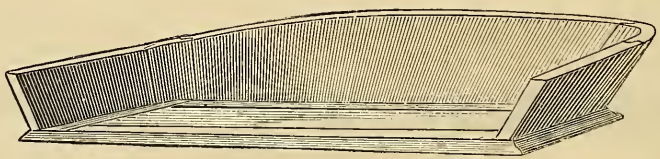
Length.	Width.	Price each.	Length.	Width.	Price each.
2 ft. 1 in.	16 in.	$3 50	2 ft. 10 in.	16 in.	$3 50
2 4	16	3 50	2 11	16	3 50
2 6	16	3 50	3 --	16	3 50
2 7	16	3 50	3 2	16	3 50
2 8	16	3 50	3 4	16	3 50
2 9	16	3 50	3 6	16	3 50



Solid Bent Board Seat.

Measure the under side of Frame for the size.

Length.	Width.	Price each.	Length.	Width.	Price each.
2 ft. 6 in.	16 in.	$3 00	2 ft. 11 in.	16 in.	$3 00
2 7	16	3 00	3 --	16	3 00
2 8	16	3 00	3 2	16	3 00
2 9	16	3 00	3 4	16	3 00
2 10	16	3 00	3 6	16	3 00

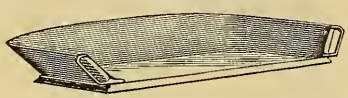


Pieced Back Seat.

Measure the under side of Frame for the size.

Length.	Width.	Price each.	Length.	Width.	Price each.
2 ft. 6 in.	16 in.	$2 50	2 ft. 11 in.	16 in.	$2 50
2 7	16	2 50	3 --	16	2 50
2 8	16	2 50	3 2	16	2 50
2 9	16	2 50	3 4	16	2 50
2 10	16	2 50	3 6	16	2 50

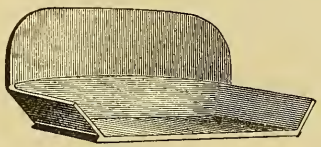
BUGGY SEATS.



Solid Bent Board Seat, with Handles.

Measure the under side of Frame for the Size.

Length.	Width.	Price Each.	Length.	Width.	Price Each.
2 ft. 6 in.	16 in.	$3 25	2 ft. 11 in.	16 in.	$3 25
2 7	16	3 25	3	16	3 25
2 8	16	3 25	3 2	16	3 25
2 9	16	3 25	3 4	16	3 25
2 10	16	3 25	3 6	16	3 25



High Back Seat.

With High Back, add ..... $12 00 per dozen.

Square Cornered Seats.

Measure the under side of Frame for the Size.

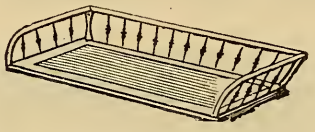
Length.	Width.	Price Each.	Length.	Width.	Price Each.
2 ft. 6 in.	16 in.	$2 50	2 ft. 11 in.	16 in.	$2 50
2 7	16	2 50	3	16	2 50
2 8	16	2 50	3 2	16	2 50
2 9	16	2 50	3 4	16	2 50
2 10	16	2 50	3 6	16	2 50

Used for Express, Grocers', Sewing Machine, and Truck Wagons, where they are liable to have hard usage. If made to order, varying from the usual width and involving extra cost, a special price will be charged. Can also furnish Malleable Iron Handles for all board Seats; if desired, Japanned ready for use.

Finished Square Seat.

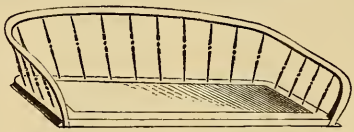
Price $1 50

BUGGY SEATS.



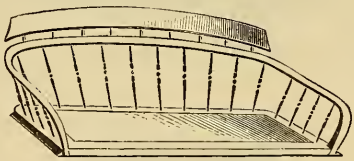
Spindle Seat, Square Corners.

With Corner Posts and Square Back Corners, unfinished for trimming, 35 in. and less in length, 16 in. wide ..... $30 00 per dozen.
Seats more than 35 in. long, add for each additional inch ..... 50 "



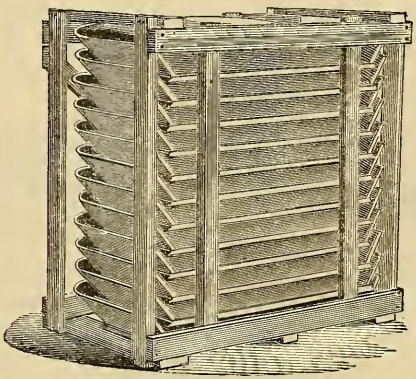
Spindle Seat, Bent Rail.

With Rail finished for painting, 35 in. and less in length, and 16 in. wide, usual flare ..... $27 00 per dozen.
Without flare beyond Seat Frame for Standing Top Work ..... 28 50 "



Spindle Seat, Extra Back.

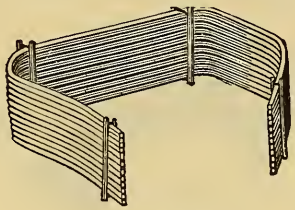
With the Extra Back Piece above the Rail ..... add $9 00 per dozen.



Seats as Packed for Shipping.

One dozen Seats can be packed for shipping as shown in above illustration, taking up but little room, and will weigh, including the crate, from 160 to 175 pounds.

SEAT RAILS.



Bent Whole.

Oak,	⅞ in. Square	$5 50	per dozen.
Ash,	⅞ "	6 50	"
Hickory,	⅞ "	9 00	"

If desired larger than ⅞ in. square, an extra charge will be made.

The experience of carriage makers has been, that a spliced seat rail almost invariably gives way after being used awhile, and the above being bent in one piece entirely avoids that annoyance. Each Rail is marked the size of the Seat Frame for which it is intended, allowing for the ordinary flare. The Rail is intended to flare beyond the frame, 1½ in. on each end, and 3 in. at the back on all Seats except for standing Top Work, and on such work should be no longer than the frame.

When ordering, care should be taken to mention the size of the Seat they are intended for.

Seat Back, Bent Corners.

Excelsior or Pieced Back	$1 25	each.
Hubbell's, Solid, Bent Back	1 25	"

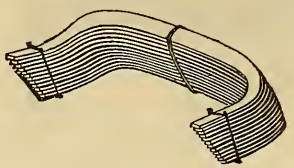
Packed 3 in a Bundle.

Seat Backs should be kept dry, and should be piled upside down, as the weight of the pile prevents the arms from spreading.

Bent Seat Arms.

Oak,	⅞ in. Square	$2 25	per dozen pairs.	
Ash,	⅞ "	3 25	"	"
Hickory,	⅞ "	4 50	"	"

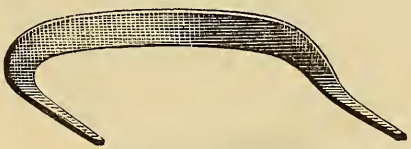
LAZY BACKS.



Improved.

For Straight Back Seats ..... $8 00 per dozen.

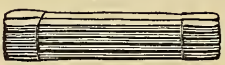
Above is an improvement upon the old method of making Lazy Backs. The arms are tenoned into the back, instead of lapping them on the outside, and as made will stand double the strain of the old style. Are measured from outside to outside of the arms. When ordering, always state the outside measure.



For Iron Seats.

For Iron Seats ..... $10 00 per dozen.

Above are for Iron Seats and all Swell Back Seats, and curve outward at the back to suit the rounding part of such Seats.



Pole Eveners.

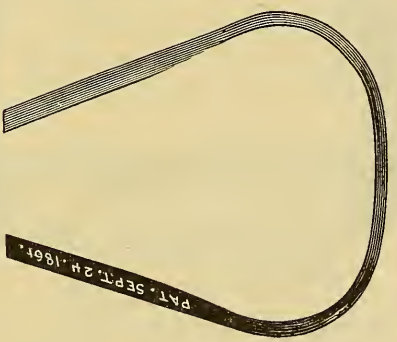
Hickory, finished,	$1\frac{1}{4} \times 2\frac{1}{4}$ in.	Common	$2 50	per dozen.
" "	$1\frac{1}{4} \times 2\frac{1}{4}$	Select	2 75	"
" "	$1\frac{3}{8} \times 2\frac{1}{2}$	Common	2 50	"
" "	$1\frac{3}{8} \times 2\frac{1}{2}$	Select	2 75	"

POLE CIRCLES.

Finished.

Finished Circles ..... $2 50 per dozen.
Unfinished " ..... 1 25 "

BENT HAWNS.



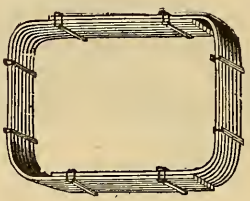
Front.

Wagon Hawns, Front ..... $1 00 per set.

Hind.

Wagon Hawns, Hind ..... $2 50 per set.

BENT BOWS.



Buggy Bows.

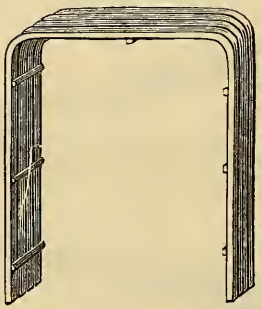
Ash (4 pieces to a set)..... $1 00 per set.

A Bundle contains 4 Set.

Short Buggy Bow,

TO BE USED WITH THE TUBULAR BOW SOCKETS.

Ash, first growth, 4 pieces to a set..... $0 60 per set.
" second " 4 " " ..... 80 "



Wagon and Express Bows.

Round Top, 5 pieces to a set—Ash or Oak..... $0 80 per set.
Square " 5 " " " " ..... 80 "
Express, 4 " " " ..... 1 00 "

BUGGY POLES.

SINGLE AND DOUBLE BENT HEEL.

Unfinished.

Single Bent Heel	X Common	$1\frac{7}{8} \times 2\frac{3}{8}$	in.	$5 00	per dozen.
" " "	X "	2 $\times 2\frac{1}{2}$		5 00	"
" " "	XX Select	$1\frac{7}{8} \times 2\frac{3}{8}$		6 50	"
" " "	XX "	2 $\times 2\frac{1}{2}$		6 50	"
" " "	XX "	2 $\times 2\frac{3}{4}$		9 00	"
" " "	XX "	2 $\times 3$		9 00	"
" " "	XXX Extra Select	$1\frac{7}{8} \times 2\frac{3}{8}$		9 00	"
" " "	XXX " "	2 $\times 2\frac{1}{2}$		9 00	"
" " "	Black Hickory	$1\frac{7}{8} \times 2\frac{3}{8}$		12 00	"
" " "	" "	2 $\times 2\frac{1}{2}$		12 00	"
Double " "	XX Select	$1\frac{7}{8} \times 2\frac{3}{8}$		9 00	"
" " "	XX "	2 $\times 2\frac{1}{2}$		9 00	"
" " "	XXX Extra Select	$1\frac{7}{8} \times 2\frac{3}{8}$		11 00	"
" "	XXX " "	2 $\times 2\frac{1}{2}$		11 00	"

Finished with Cross Bars.

Single Bent Heel	XX Select	$1\frac{7}{8} \times 2\frac{3}{8}$	in.	$12 00	per dozen.
" " "	XX "	2 $\times 2\frac{1}{2}$		12 00	"
" " "	XXX Extra Select	$1\frac{7}{8} \times 2\frac{3}{8}$		15 00	"
" " "	XXX " "	2 $\times 2\frac{1}{2}$		15 00	"
Double " "	XXX " "	$1\frac{7}{8} \times 2\frac{3}{8}$		18 00	"
" " "	XXX " "	2 $\times 2\frac{1}{2}$		18 00	"

Finished with Whiffletrees, Evener and Neck Yoke.

Complete for Buggies, Single Bend	$2 50 each.
" " Road Wagons "	2 50 "
" " Skeleton "	2 50 "
" " Buggies, Double Bend	2 75 "

SHAFTS.

BENT AND STRAIGHT HEEL.

Unfinished.

BUGGY.

Straight Heel, XX Select, $1\frac{3}{8} \times 1\frac{7}{8}$ in..... $5 00 per dozen pairs.

EXPRESS.

Straight Heel, XX Select, $1\frac{7}{8} \times 2\frac{1}{4}$ in..... $5 00 per dozen pairs.

BUGGY.

Bent Heel,	X	Common,	$1\frac{3}{8} \times 1\frac{7}{8}$ in.	$5 00	per dozen	pairs.
" "	X	"	$1\frac{1}{2} \times 2$	5 00	"	"
" "	XX	Select,	$1\frac{3}{8} \times 1\frac{7}{8}$	6 50	"	"
" "	XX	"	$1\frac{1}{2} \times 2$	6 50	"	"
" "	XXX	Extra Select,	$1\frac{3}{8} \times 1\frac{7}{8}$	9 00	"	"
" "	XXX	" "	$1\frac{1}{2} \times 2$	9 00	"	"
" "	◇	Second Growth,	$1\frac{3}{8} \times 1\frac{7}{8}$	12 00	"	"
" "	◇	" "	$1\frac{1}{2} \times 2$	12 00	"	"
" "	◇	Black Hickory,	$1\frac{3}{8} \times 1\frac{7}{8}$	12 00	"	"
" "	◇	" "	$1\frac{1}{2} \times 2$	12 00	"	"
" "	Best	Second Growth,	$1\frac{3}{8} \times 1\frac{7}{8}$	18 00	"	"
" "	"	" "	$1\frac{1}{2} \times 2$	18 00	"	"

Adams' Express Shafts.

DOUBLE BEND AT BACK, AND COUPE BEND FORWARD.

Second Growth Ash, unfinished,			$1\frac{3}{4} \times 2\frac{1}{4}$ in. at Bar	$42 00	per dozen	pairs.
" "	" "		$2 \times 2\frac{1}{2}$ "	45 00	"	"
" "	" "		2×3 "	48 00	"	"

Coupe Shaft. No. 1.

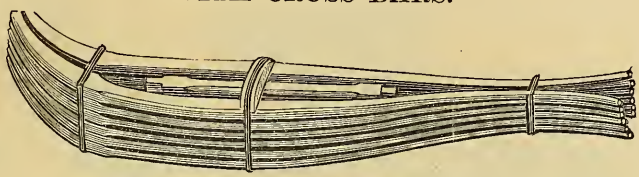
Coupe Shaft. No. 2.

Ash, unfinished,	Common	$20 00	per dozen pairs.
" "	Select	23 00	" "
Hickory, "	Common	23 00	" "
" "	Select	25 00	" "
Finished Front of Cross Bar, add		5 00	" "

No. 1 Coupe Shaft is for low Forward Wheels, from 2 ft. 8 in. to 3 ft. 2 in.
2 " " " ordinary " " " 3 4 " 3 10

SHAFTS,

WITH CROSS BARS.



Finished.

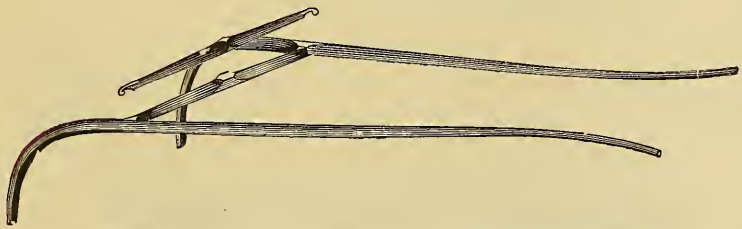
BUGGY.

Bent Heel, XX Select,	1⅜ × 1⅞ in	$12 00	per dozen pairs.
" " XX "	1½ × 2	12 00	" "
" " XXX Extra Select,	1⅜ × 1⅞	15 00	" "
" " XXX " "	1½ × 2	15 00	" "
" " Black Hickory,	1⅜ × 1⅞	18 00	" "
" " " "	1½ × 2	18 00	" "
" " Best Second Growth,	1⅜ × 1⅞	24 00	" "
" " " " "	1½ × 2	24 00	" "

Wagonette Shafts.

COUPE BEND FORWARD AND BUGGY BEND AT BACK.

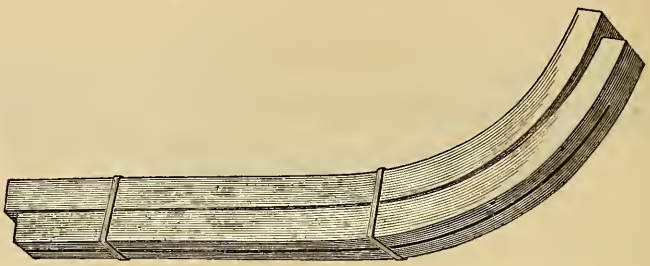
Hickory, Unfinished, Common	$25 00	per dozen pairs.
" " Select	28 00	" "
" Finished, Common	30 00	" "
" " Select	33 00	" "



Finished, with Cross Bar and Whiffletree.

Complete, for Buggies	$1 50	per pair.
" " Road Wagons	1 50	"
" " Skeleton Wagons	1 50	"

BOB RUNNERS.



Bent Solid.

1½	in. Tread,	2	in. deep	$1 25 per set.
1½	"	2¼	"	1 35 "
2	"	2½	"	1 50 "
2	"	2¾	"	1 60 "
2	"	3	"	1 75 "
2	"	3½	"	2 00 "
2	"	4	"	2 25 "
2¼	"	4½	"	2 75 "
2¼	"	5	"	3 25 "

LONG SLEIGH RUNNERS.

1½	in. deep	$0 75	per set.
1¾	"	85	"
2	"	1 00	"
2¼	"	1 25	"
2½	"	1 35	"
2¾	"	1 40	"
3	"	1 50	"
3½	"	1 75	"
4	"	2 00	"
4½	"	2 15	"
5	"	2 25	"

BOB SLEIGH GEARINGS.

Saddle.

One Saddle to a Set ..... $0 12 each.

Roller.

Two Rollers to a Set ..... $0 30 per set.

Knees.

Ten Knees to a Set ..... $0 50 per set.

Beams.

Five Beams to a Set ..... $0 75 per set.

Raves.

Four Raves to a Set ..... $0 75 per set.

Reach.

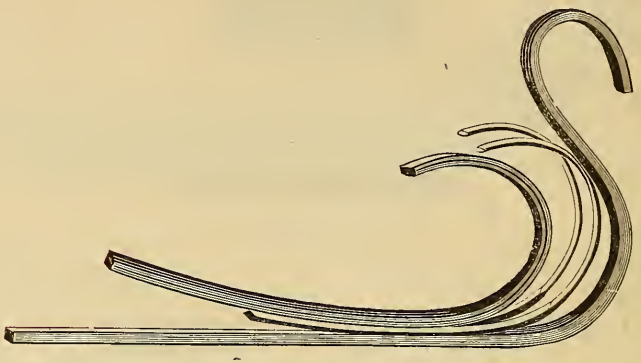
One Reach to a Set ..... $0 13 each.
" Complete Set of 23 pieces ..... 2 50 per set.

Bob Sleigh Bench.

Sawed ..... $0 50 each.

BENT CUTTER STUFF.

INCLUDING RUNNERS, RAVES AND FENDERS.



Portland Body.

For 1 Seat ..... $1 75 per set.

Cutter Runners.

1 × 1¼ in. ..... 50 cents per set.
1⅛ × 1½ ..... 50 " "

Cutter Raves.

Wide, for Square Cutters ..... 90 cents per pair.
Ordinary, " " ..... 50 " "
" Swell " ..... 75 " "

Cutter Fenders.

For Square Cutter ..... 50 cents per pair.
" Swell " with Belt Pieces ..... 75 " " set.

Cutter Knees and Beams.

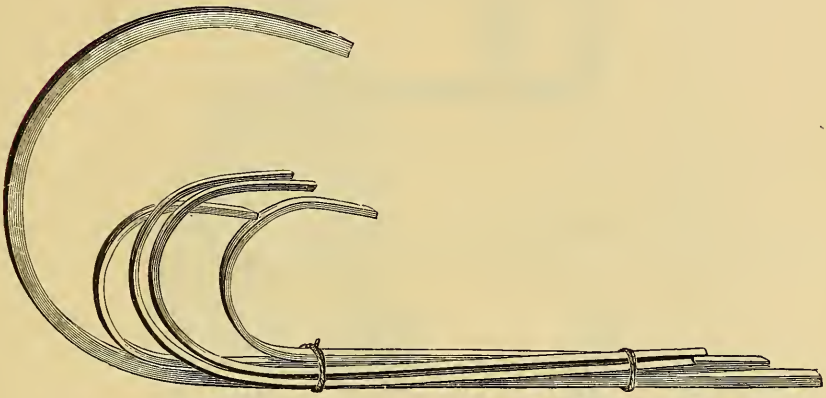
Straight and Rough ..... 50 cents per set.

Cutter Arm Pieces.

Two Pieces ..... 50 cents per pair.

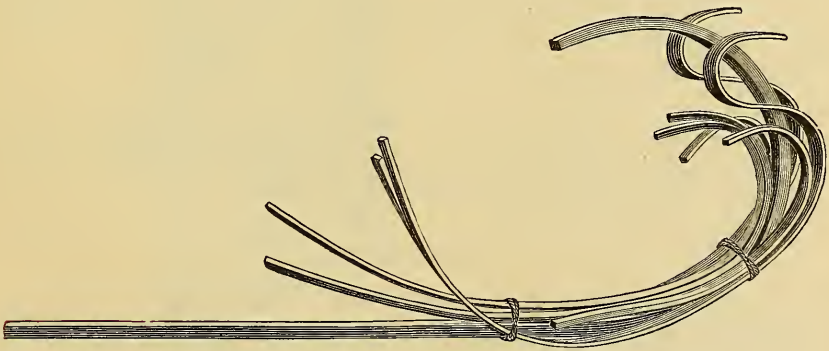
BENT CUTTER STUFF.

INCLUDING RUNNERS, RAVES AND FENDERS.



Square Body.

For 1 Seat..... $1 25 per set.
" 2 " ..... 1 50 "

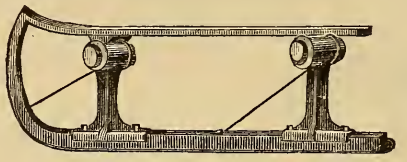


Swell Body.

For 1 Seat..... $1 75 per set.
" 2 " ..... 2 25 "

RUNNER ATTACHMENTS.

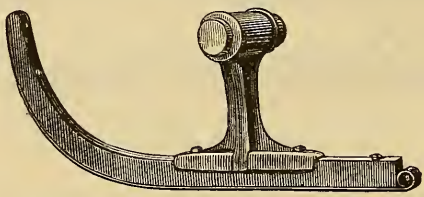
FOR WHEELED VEHICLES.



For Buggies.

No. 1. Buggy Runners..... $9 50 per set.

The only device yet produced strong enough, practical and cheap. This style Runner is adapted to buggies that do not have gear longer than 5 feet.



For Express Wagons.

No. 2. Express Wagon Runners..... $10 50 per set.

Above will fit any iron axle wagon desired, and is adapted to all styles of express wagons, milk wagons, grocery wagons, bakery wagons, market wagons and business wagons of all kinds.

No. 3. Thimble Skein Attachment, for 3¼ × 10 Skeins..... $12 00 per set.

The 3¼ × 10 Skein Wagon being the size mostly used at present time for farm wagons, they are only made to fit wagons with this size Skein.

CONSTRUCTION.

They are constructed by means of two cast knees on one runner. These knees terminate in a long base, with flanges on either side, to which the runner with steel shoe is firmly bolted. The socket of the knee is fitted with a solid wooden hub or plug ; this hub is left long, so it can be fitted to any axle desired, by sawing off the hub to the correct length, then bore a hole through the exact size to fit the axle desired. A rave extends from the nose of the runner, which is bolted to each knee, making it not only strong and durable, but stylish.

For shipping, we leave the hind knee adjustable, so it can be set to fit the gear of the buggy it is desired to attach it to; then bolt the knee firmly and paint to match the color of the gearing.

The feature of converting buggies into sleighs is at once appreciated by everybody in cities and large towns, where sleighing is of but short duration. They make a very stylish sleigh at comparatively no expense, and require no extra storage room during the summer season or when not in use.

RUNNER ATTACHMENTS.

FOR WHEELED VEHICLES.

Oviatt Patent Bob Sled.

No. 2 Size ..... $25 00 per set.

The above has been in use several years and has proven to be a very superior Sled, combining the most valuable improvements. Each Runner adjusts itself to the most uneven and rough ground, without interfering with the motion of the other.

They have chilled Shoes, which are very durable, and do not stick to bare places, and being wide on the bottom do not cut through light snow. The whole Sled is so arranged that it can be taken apart, and stored away in a small space. The length of the Sled can be adjusted as desired, by means of an extension Reach.

HICKORY HANDLES.

POLISHED.

Shaved Axe Handle.

Extra.	Oval	$4 00 per dozen.
"	Octagon	3 50 "
No. 1.	Oval	3 00 "

Turned Axe Handle.

Second Growth		$3 50 per dozen.
Extra		3 00 "
No. 1		2 50 "

Double-bitted Axe Handle.

Extra.	Turned, 34 and 36 in.	$3 00 per dozen.
No. 1.	" 34 " 36	2 25 "
2.	" 34 " 36	1 75 "

Broad Axe Handle.

Extra		$4 50 per dozen.
No. 1		3 50 "

Spanish Axe Handle.

Extra.	36 in	$3 50 per dozen.
No. 1.	36	3 00 "
2.	36	2 50 "

HICKORY HANDLES.

POLISHED.

Adze Handle.

Extra	$3 50	per dozen.
No. 1	2 75	"
2	2 00	"

Ship Carpenter's Adze Handle.

Extra.	36 in.	$4 00	per dozen.
No. 1.	36	3 50	"
2.	36	3 00	"

Hatchet Handles.

13, 14 and 15 in., Shingling	$0 50	per dozen.
16 and 17 in., Bench	0 70	"
18 " 20 "	1 00	"

Adze Eye Hammer Handle.

13 and 14 in.	$0 50	per dozen.
15 " 16	75	"

Machinist's and Engineer's Hammer Handle.

14 and 16 in.	$0 75	per dozen.
18 " 20	1 25	"
22 " 24	1 50	"

Stonecutter's Hammer Handle.

Extra	$0 75	per dozen.

HICKORY HANDLES.

POLISHED.

Railroad Pick Handle.

All White, Second Growth Hickory	$4 00	per dozen.
Extra, Our Spread Eye	3 00	"
No. 1. Red	2 25	"
2. Mixed	1 75	"

Drifting Pick Handle, Washoe Pattern.

Extra Select, 30, 32, 34 and 36 in.	$3 00	per dozen.
No. 1. 30, 32, 34 " 36	2 50	"
2. 30, 32, 34 " 36	2 00	"

Poll Pick Handle, California Pattern.

Extra Select, 30, 32, 34 and 36 in.	$3 00	per dozen.
No. 1. 30, 32, 34 " 36	2 50	"
2. 30, 32, 34 " 36	2 00	"

Sledge Handle.

Extra Select, 36 in.	$2 75	per dozen.
" 28, 30 and 32 in.	2 25	"
" Chisel	2 25	"

Blacksmith's Hammer Handle.

14 and 16 in.	$0 75	per dozen.
18 " 20	1 25	"
22 " 24	1 50	"

Maul and Turning Hammer Handle.

Extra, 34 and 36 in.	$3 00	per dozen.
" 28, 30 " 32	2 50	"

HICKORY HANDLES.

A. 1. XX. Hay Fork Handles—in Square Bundles.

No. 2. Hay Fork Handles—in Round Bundles.

4 ft.	$1 30 per dozen.	5½ ft.	$1 65 per dozen.
4½	1 40 "	6	1 85 "
5	1 50 "	7	2 50 "

Bent Hay Fork Handles.

Same lengths as Nos. 1 and 2 ..... extra, $0 25 per dozen.

Garden Rake Handles.

5½ ft. ..... $1 40 per dozen. 6 ft. ..... $1 50 per dozen.

Farmers' Hoe Handles.

Price ..... $1 10 per dozen.

Socket Hoe Handles.

Price ..... $1 10 per dozen.

Bent Manure Fork Handles.

4 ft. ..... $1 75 per dozen. 4½ ft. ..... $2 00 per dozen.

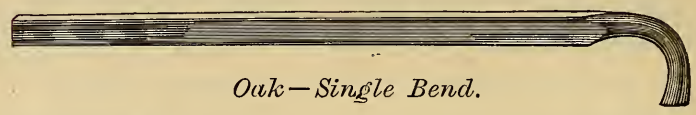
Bent Shovel or Spade Handles.

Shovel ..... $2 50 per dozen. Spade ..... $2 50 per dozen.

D Handles.

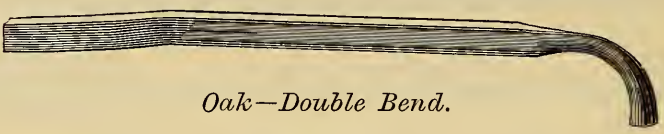
D—Bent Manure Fork and Spading Fork	$3 00 per dozen.
D—Bent Shovel and Spade	3 35 "
D—Bent Scoop	3 50 "

PLOW HANDLES.



Oak—Single Bend.

Single Bend, or Straight ..... $0 30 per pair.



Oak—Double Bend.

MOULD BOARD.

Double Bend, Right and Left ..... $0 40 per pair.

CULTIVATOR HANDLES.

Straight, 1¼ × 2 × 3½ ft. to 4 ft.	$0	10 each.
" 1¼ × 2¼ × 3½ " 4		12 "
Single Bend, 1¼ × 2 × 3½ ft. to 4 ft.		12 "
" 1¼ × 2¼ × 3½ " 4		14 "

To get the length, measure from end to end around the back.

PLOW BEAMS.

Oak, in Rough.

For Stirring Plows, 5 ft. 6 in. long	$0	60 each.
" Breaking " 6 "		75 "

PLOW ROUNDS.

Hickory, 6 in. to 24 in. long	$2	50 per hundred.
Oak 6 " 24 "	1	75 "

LUMBER.

FOR WAGON AND CARRIAGE MAKERS' USE.

Oak Plank.

Common Dry	$40 00 to $45 00 per M feet.
Clear "	45 00 " 50 00 " "

Hickory Plank.

Common Dry	$50 00 to $55 00 per M feet.
Clear "	55 00 " 60 00 " "

Ash Plank.

Common Dry	$40 00 to $45 00 per M feet.
Clear "	50 00 " 55 00 " "

White Wood.

Common Dry	$35 00 to $40 00 per M feet.
Clear "	40 00 " 50 00 " "

Bass Wood.

Common Dry	$35 00 to $40 00 per M feet.
Clear "	40 00 " 50 00 " "

Harrow Lumber.

Clear and Dry, cut to sizes ..... $50 00 per M feet.

Usual sizes as follows:

$2\frac{1}{4} \times 2\frac{1}{4} \times 10$ ft. | $2\frac{1}{2} \times 2\frac{1}{2} \times 12$ ft. | $3 \times 3 \times 14$ ft. | $2 \times 1 \times 12$ ft. | $4 \times 1\frac{1}{2} \times 12$ ft.

All Lumber can be dressed as follows:

One side	$2 00 per M feet.
Two "	3 00 " "

SPOKES.

TABLE OF WEIGHTS IN POUNDS PER SET.

Forest Hickory.

Sizes	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞	2	in.
XX	13	17	19	23	30	35	37	40	45	51	55	
XXX Select Mixed	16	19	22	27	33	38	41	44	48	55	59	
XXX " Red	18	21	24	29	35	40	43	46	50	57	61	
XXX Ex. " White	22	25	28	33	39	44	47	50	56	65	69	
XXX " " Mixed	19	22	25	30	36	41	44	47	53	60	64	
XXX " " Red	22	25	28	33	39	44	47	50	56	63	67	

Second Growth Hickory.

Sizes	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞	2	in.
Select	24	27	30	35	41	46	49	52	58	65	69	
Ex. " Mixed	26	29	32	37	43	48	51	54	60	67	71	
" " White	28	31	34	39	45	50	53	56	62	69	73	

Forest Oak.

Sizes	1½	1⅝	1¾	1⅞	2	2⅛	2¼	2⅜	2½	2⅝	2¾	2⅞	3	3¼	3½	in.
XX	33	36	40	42	45	50	56	64	74	82	87	90	98	120	128	
XXX					47	53	59	67	77	85	90	94	104	126	134	
XXX Select	40	43	46	49	52	58	63	71	82	90	96	100	110	134	144	
XXX Ex. "	43	46	49	52	55	62	66	74	86	94	100	105	115	140	150	

Second Growth Oak.

Sizes	1½	1⅝	1¾	1⅞	2	2⅛	2¼	2⅜	2½	2⅝	2¾	2⅞	3	3¼	3½	in.
Select	41	45	51	58	62	68	72	80	92	98	103	109	118	143	155	
Ex. "	44	48	53	60	64	71	75	83	95	103	108	113	123	149	160	

Table, Giving Dimensions.

Size of Spokes	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞	2	2⅛	in.
Thickness of Band,	⅝	11/16	¾	13/16	⅞	15/16	1	1 1/32	1 1/16	1⅛	1⅛	1 3/16	
Width of Tips	11/16	⅞	15/16	1	1 1/16	1⅛	1 5/32	1 3/16	1¼	1¼	1¼	1 5/16	
Thickness "	⅝	11/16	¾	13/16	⅞	15/16	1	1 1/32	1 1/16	1⅛	1⅛	1 3/16	
Length of Tenon	1⅝	1¾	1¾	1¾	2	2	2	2	2¼	2¼	2½	2½	
Thickness "	⅜	⅜	7/16	½	17/32	9/16	⅝	21/32	¾	13/16	13/16	27/32	
Shoulder	⅛	5/32	5/32	5/32	3/16	3/16	3/16	3/16	7/32	7/32	7/32	7/32	
Length of Face	4	4	4½	4½	4¾	4¾	5	5	5	5¼	5¼	5½	

Size of Spokes	2¼	2⅜	2½	2⅝	2¾	2⅞	3	3⅛	3¼	3½	3¾	in.
Thickness of Band	1¼	1 5/16	1⅜	1 7/16	1½	1 9/16	1⅝	1 11/32	1 11/16	1¾	1 13/16	
Width of Tips	1 1/16	1⅜	1½	1¾	1⅞	2	2 1/16	2⅛	2 3/16	2¼	2⅜	
Thickness "	1¼	1 5/16	1⅜	1 7/16	1½	1 9/16	1⅝	1 11/32	1 11/16	1¾	1 13/16	
Length of Tenon	2⅝	2⅝	2⅝	2⅞	3	3	3¼	3¼	3⅜	3⅜	3⅜	
Thickness "	⅞	29/32	15/16	1 1/32	1 1/16	1 1/16	1⅛	1 5/32	1 3/16	1¼	1 5/16	
Shoulder	¼	¼	¼	¼	9/32	9/32	9/32	9/32	5/16	5/16	5/16	
Length of Face	5½	5¾	5¾	6	6¼	6½	6¾	6¾	7	7	7¼	

Above Weights and Dimensions are given for Dry Timber.

FELLOES.

TABLE OF WEIGHTS IN POUNDS PER SET.

Black Hickory.

Sizes	1	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞	2 in. square.
Extra Select,	30	30	45	50	60	70	80	90	105 pounds.
Sizes						1⅛	1¼	1⅜	1½ in. square.
Sulky						25	25	30	30 pounds.

Second Growth Hickory.

Sizes	1	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞	2 in. square.
Extra Select,	35	35	50	55	65	75	85	95	110 pounds.
Sizes						1⅛	1¼	1⅜	1½ in. square.
Sulky						30	30	35	35 pounds.

Shell Bark Hickory.

Sizes	1	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞	2 in. square.
Select	25	25	40	45	55	68	75	85	98 pounds.
Sizes						1⅛	1¼	1⅜	1½ in. square.
Sulky						20	20	25	25 pounds.

Oak.

Sizes	1½	1⅝	1¾	1⅞	2	2⅛	2¼	2½	in. square.
Select	55	65	75	85	95	105	110	115	pounds.

Sizes	1¾ × 2	1¾ × 2¼	1⅞ × 2⅛	2 × 2¼	2 × 2½
Select	85	95	100	105	110 pounds.

Sizes	2 × 3 and	2 × 4
Cart Felloes	70	90 pounds.

BUGGY SHAFTS.

WEIGHT PER DOZEN.

Sizes	1⅜ × 2	1½ × 2	1½ × 2¼	1⅝ × 2¼	1¾ × 2¼	
Select Hickory	160	180	230	240	250	pounds.
Extra Select Hickory	165	185	235	245	260	"
Black "	170	190	240	250	270	"
Second Growth "	180	200	250			

EXPRESS SHAFTS.

WEIGHT PER DOZEN PAIRS.

Sizes	1¾ × 2¼	1¾ × 2½	1⅞ × 2⅜	2 × 2½	2 × 2¾	2 × 3
Select	250	270	270	315	335	350
Extra Select	260	280	280	325	345	360
Black Hickory	270	290	290	340	360	375

POLES.

WEIGHT PER DOZEN.

Sizes	1¾ × 2¼	1⅞ × 2⅜	2 × 2½	2 × 2¾	2 × 3	2¼ × 3	
Select Hickory	165	180	200	220	240	255	pounds.
Ex. " "	175	195	220	240	260	275	"
Black "	200	220	240	260	280	295	"

WHIFFLETREES.

WEIGHT PER DOZEN.

Wagon Oval, Select ..... 35 Pounds. Round, Select ..... 40 pounds.
" " Black Hickory 40 " " " Black Hickory ..... 45 "

NECK YOKES.

WEIGHT PER DOZEN.

Fancy Light, Select ..... 50 Pounds. Black Hickory ..... 55 pounds.
" Heavy " ..... 55 " " " ..... 60 "

DOUBLETREES.

WEIGHT PER DOZEN.

Finished, Select ..... 140 Pounds. Black Hickory ..... 150 pounds.

CIRCLE BARS.

Select, Weight per dozen ..... 45 pounds.

SHAFT BARS.

WEIGHT PER DOZEN.

Sizes	1½ × 2	1⅜ × 2⅛	1¾ × 2¼	2 × 2½	
Select Hickory	60	65	80	105	pounds.
Second Growth	70	75	90	115	"

SPRING BARS.

WEIGHT PER DOZEN.

Sizes	1½ × 2	1¾ × 2¼	
Select Hickory	60	70	pounds.
Second Growth	80	90	"

HEAD BLOCKS.

WEIGHT PER DOZEN.

Select ..... 40 Pounds. Second Growth Hickory ..... 50 pounds.

BUGGY REACHES.

WEIGHT PER DOZEN.

	SELECT.	BLACK HICKORY.	SECOND GROWTH HICKORY.	
1¼ in. Square	60	65	70	pounds.
1⅜ "	70	75	80	"

BENT AXLE BEDS.

WEIGHT PER DOZEN.

Select ..... 50 Pounds. Second Growth Hickory ..... 60 pounds.

AXLES.

WEIGHT PER PAIR.

Sizes	3×4	3¼×4¼	3½×4½	4×5	4½×5½
Weight	60	68	80	120	130 pounds.

BOLSTERS.

WEIGHT PER PAIR.

Sizes	3×4	3¼×4¼	3½×4½	4×5
Weight	35	45	55	70 pounds.

PLOW BEAMS.

Weight, each ..... 1 Horse, 12 2 Horse, 24 3 Horse, 33 pounds.

PLOW HANDLES.

Weight, per dozen ..... 1 Horse, 48 2 Horse, 55 pounds.

ASH TONGUES.

Sizes	4×4	3¾×3¾
Weight, each	45	38 pounds.

COUPLING POLES.

Weight, each ..... 22 pounds.

BOWS.

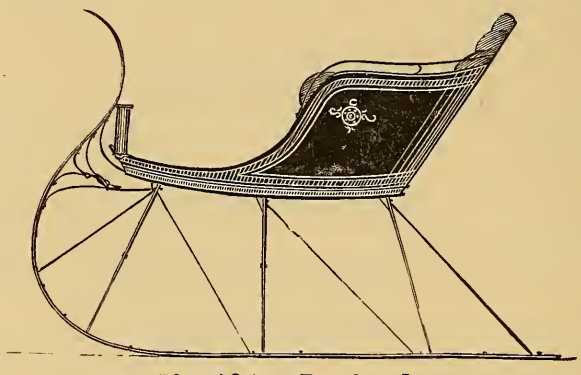
WEIGHT PER SET.

Buggy, Extra Select Ash, four pieces	¾×1¼	15 pounds.
" Select " " "	¾×1¼	12 "
Express, five pieces	⅞×1⅜	25 "
" Flat, "	⅞×1⅜	20 "
" Oval, "	⅞×1⅜	20 "
Wagon Square Top, five pieces	⅝×1⅞	25 "
" Round " "	⅝×1⅞	25 "

CUTTERS.

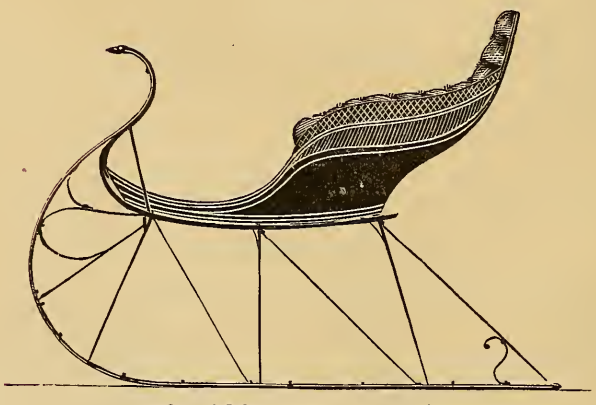
No. 130. Portland Cutter Body.

Price $25 00



No. 131. Portland.

Price $30 00

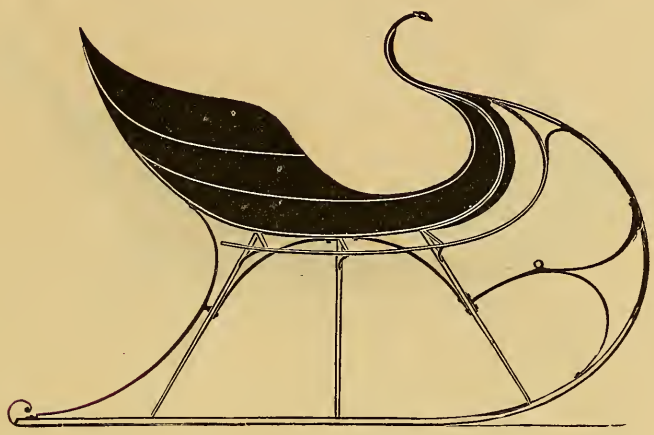


No. 132. South Park.

Price $35 00

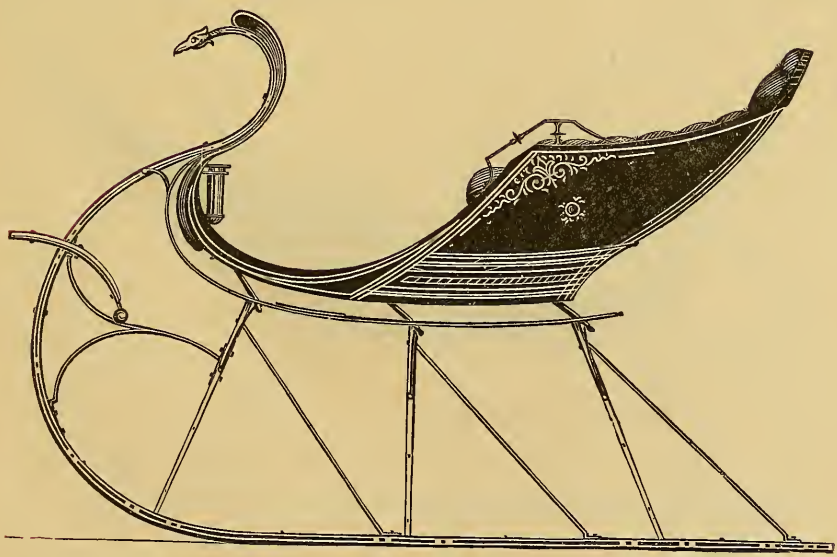
Prices given are for Wood Work only, without Irons or Shafts.

CUTTERS.



No. 133. Swell Body.

Price $33 00

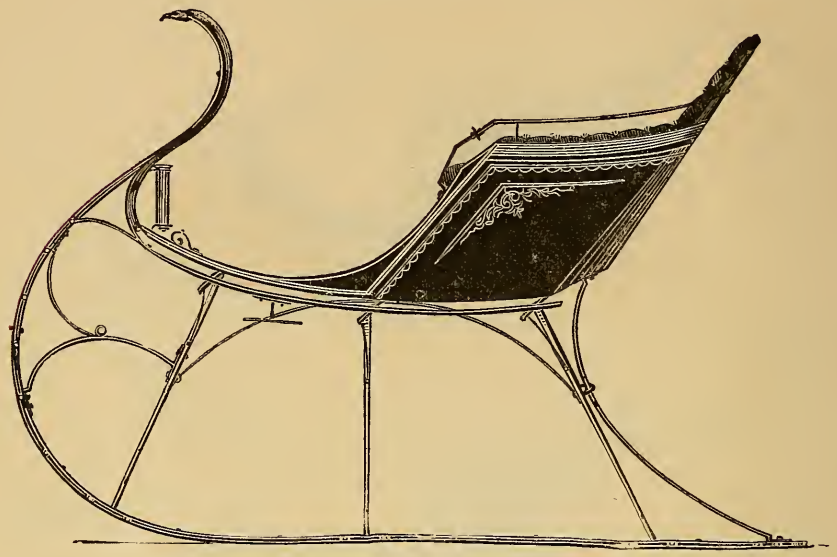


No. 134. Boston.

Price $35 00

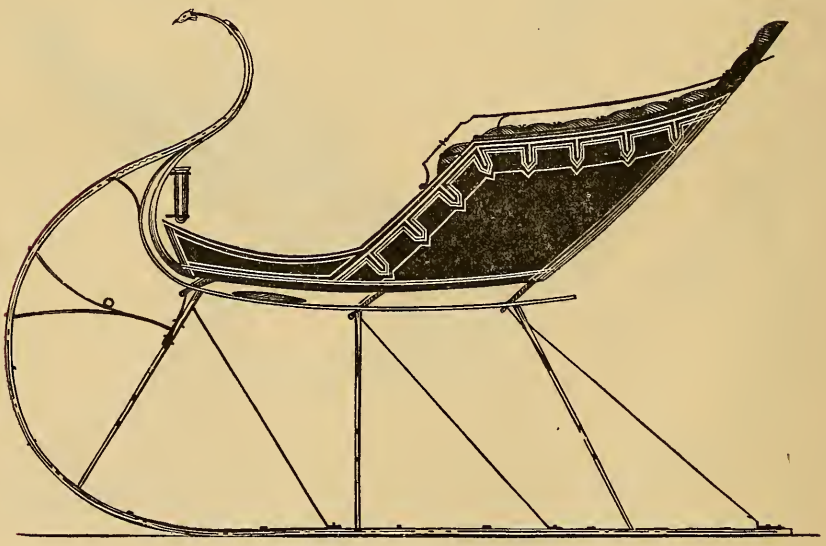
Prices given are for Wood Work only, without Irons or Shafts.

CUTTERS.



No. 135. New York.

Price $34 00

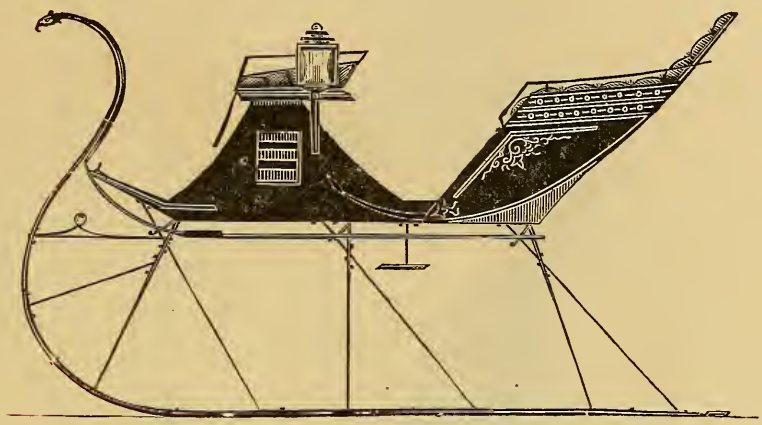


No. 136. Manhattan.

Price $33 00

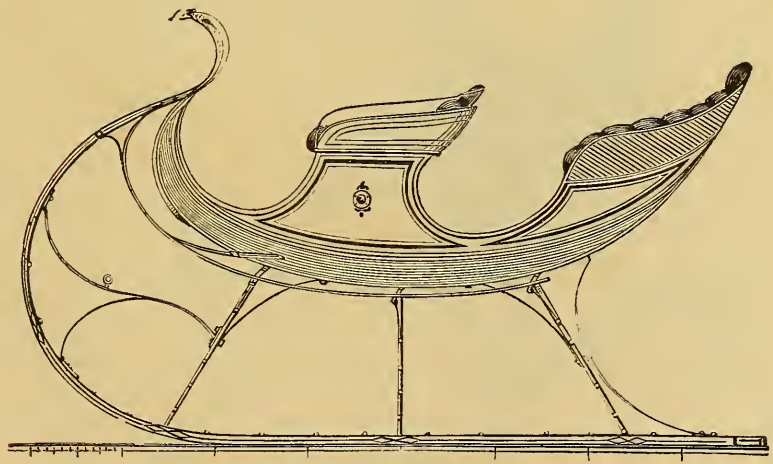
Prices given are for Wood Work only, without Irons or Shafts.

SLEIGHS.



No. 137. Boulevard.

Four-Passenger Sleigh, Portland Style..... $60 00

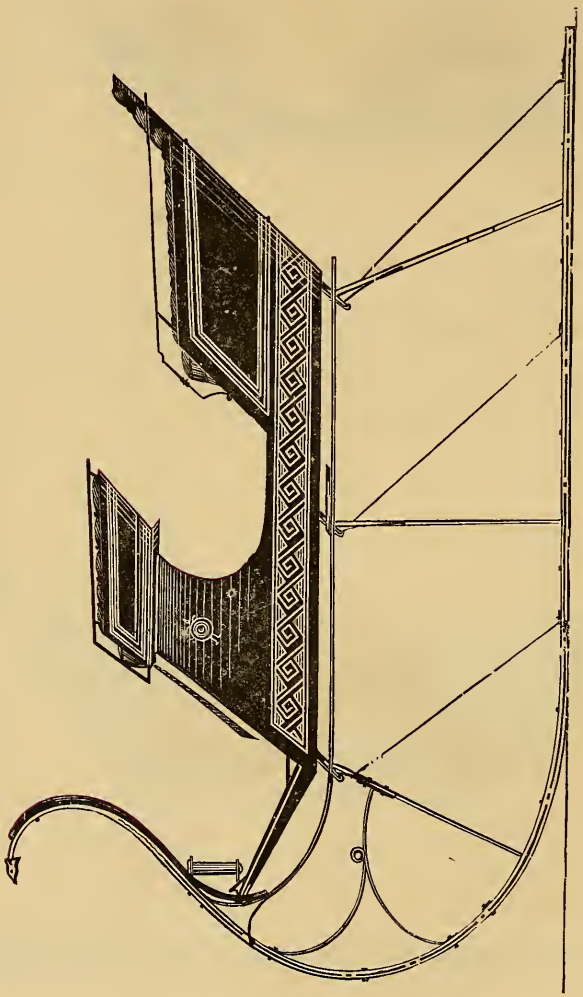


No 138. Chicago.

Four-Passenger Sleigh, Swell Body..... $80 00

Prices given are for Wood Work only, without Irons, Shafts or Poles.

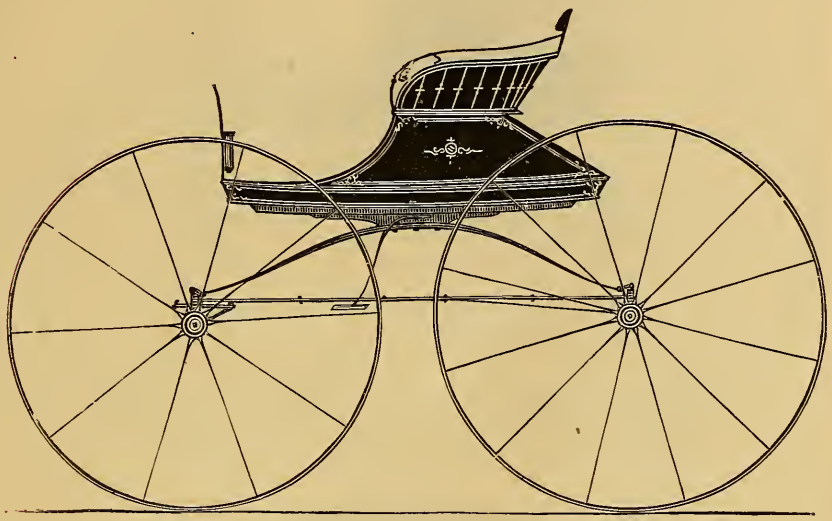
SLEIGHS.



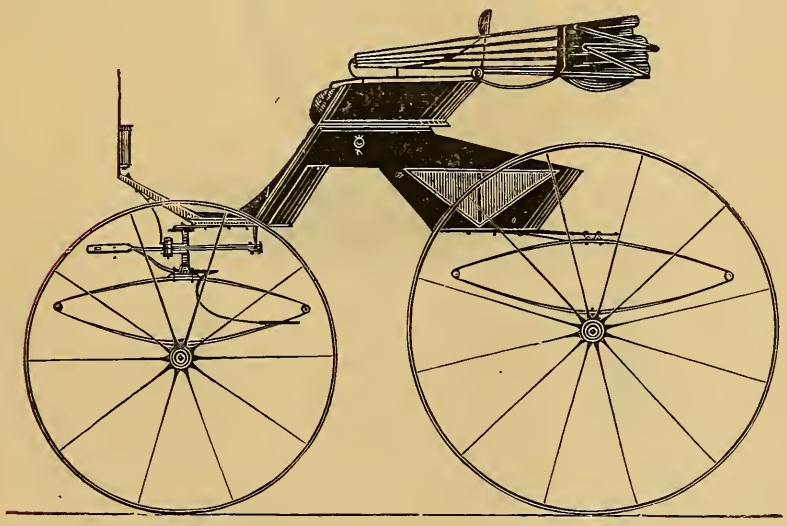
No. 139. Centennial.

Four-Passenger Sleigh, with high front Seat..... $70 00

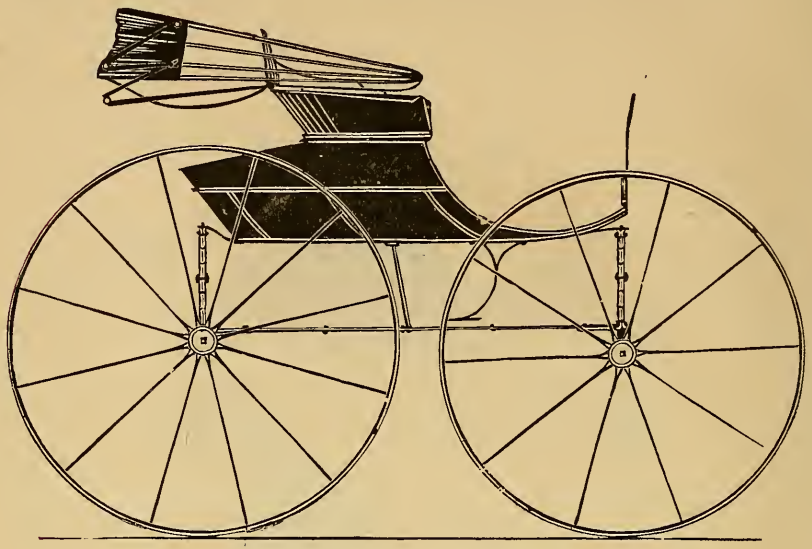
Price given is for Wood Work only, without Irons, Shafts, or Pole.



No. 140. Concord Wagon.

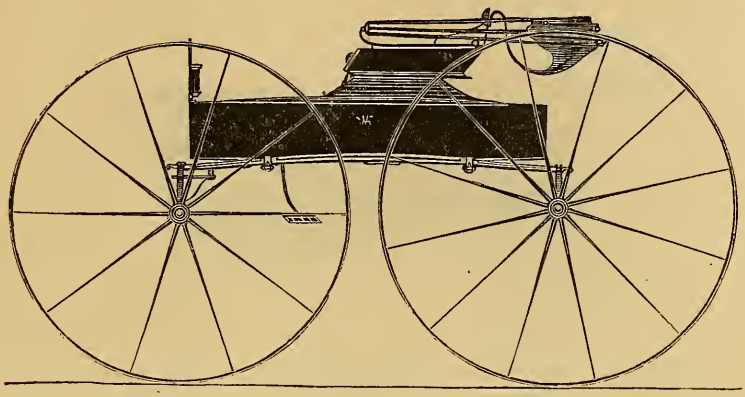


No. 141. Cut Under Coal Box.

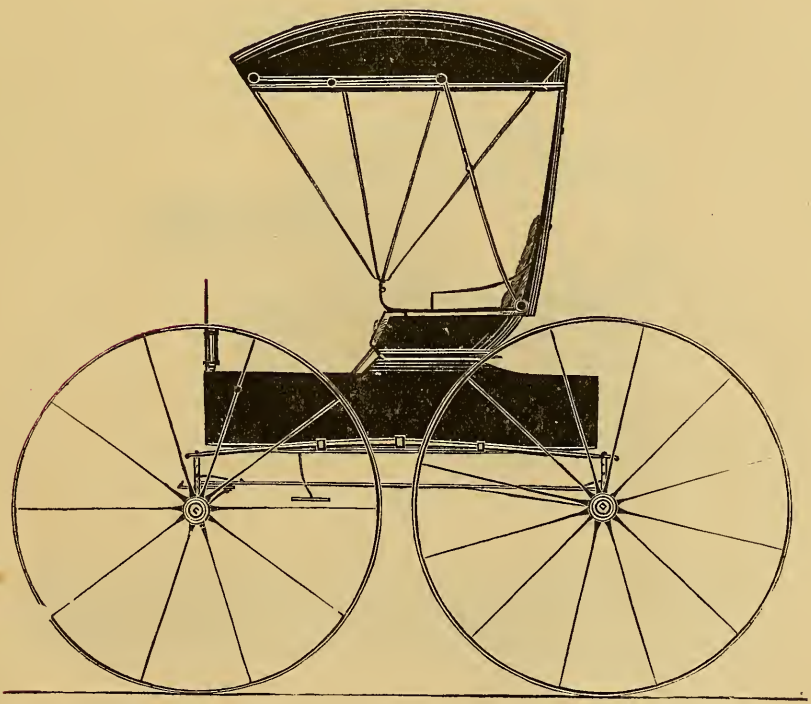


No. 142. Coal Box Wagon, Panel Sides.

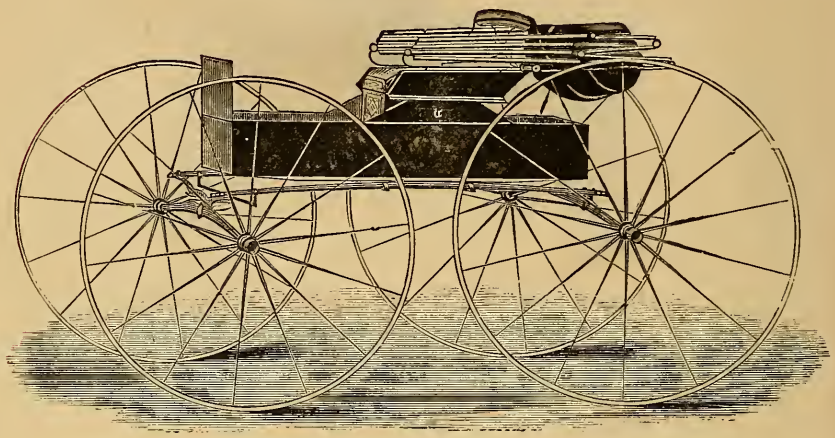
No. 143. Coal Box Wagon, Beaded Sides.



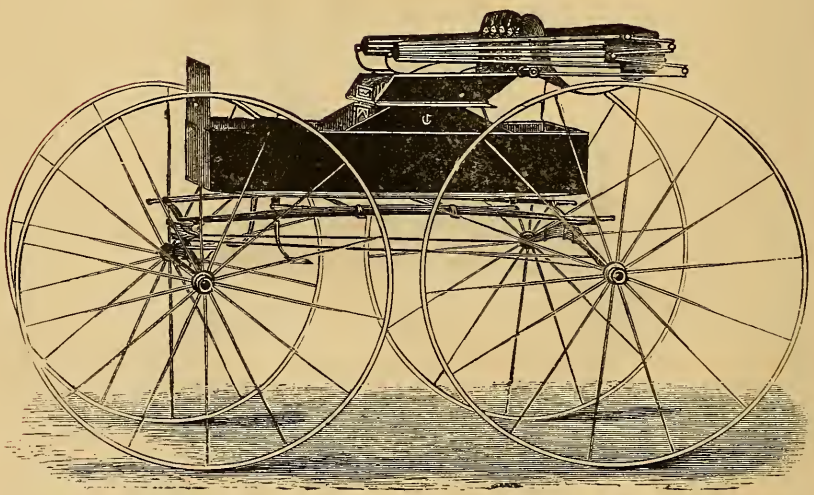
No. 148. Windsor Wagon, for One Person.



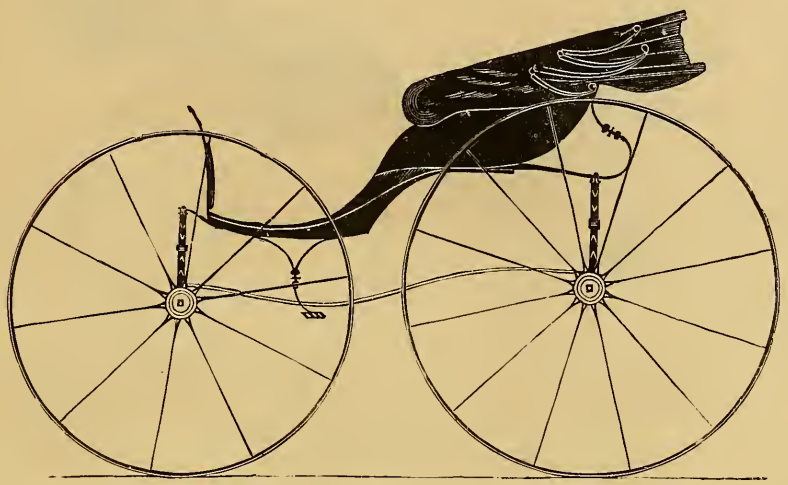
No. 149. Side Spar Trotting Wagon.



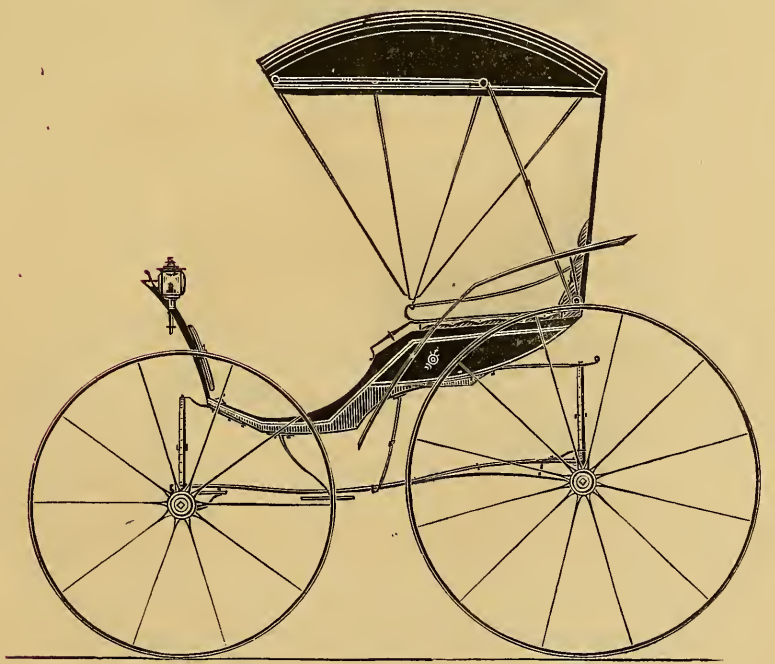
No. 150. The Morris Buggy.



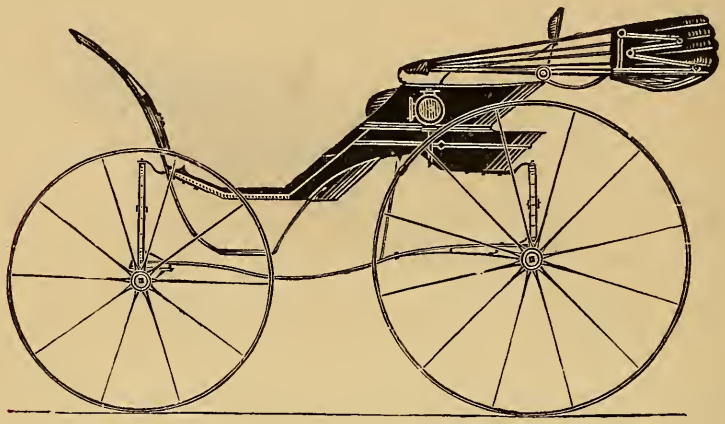
No. 151. Chamberlin's Improved Side Spar Buggy.



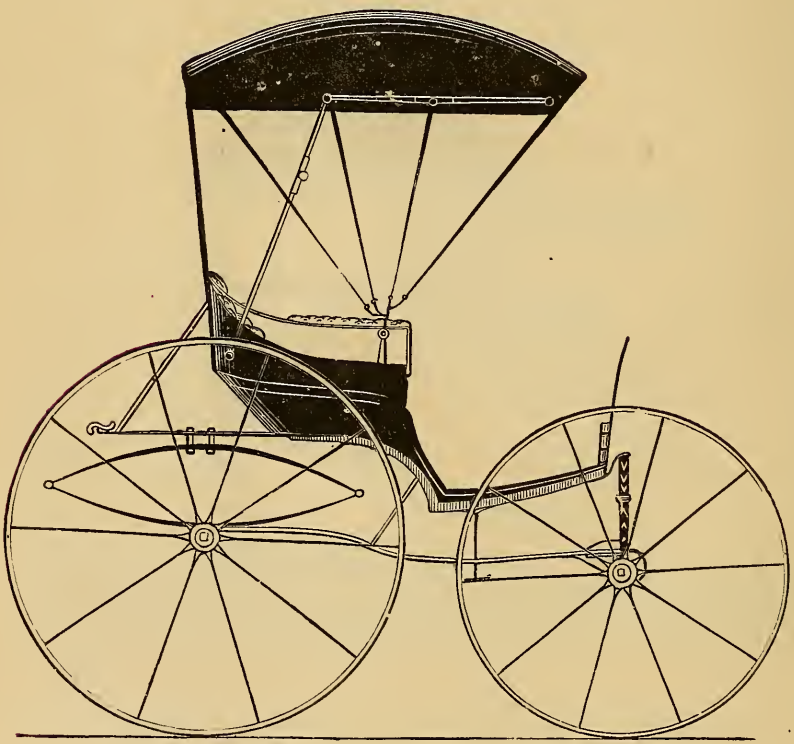
No. 144. Ladies' Phaeton.



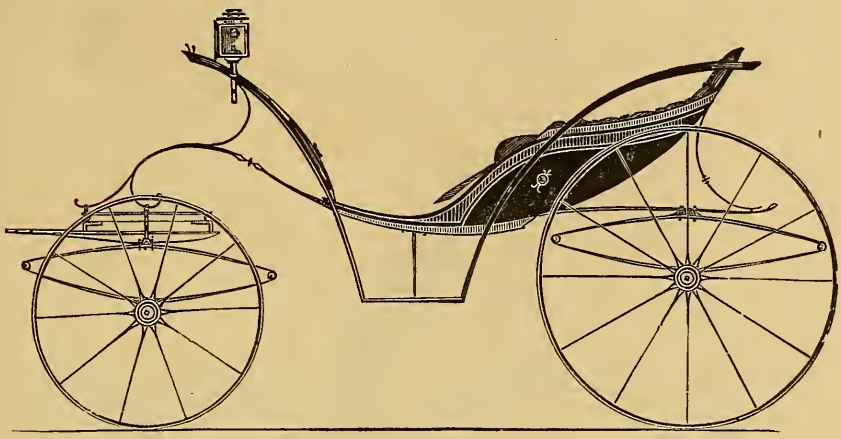
No. 145. Chicago Phaeton.



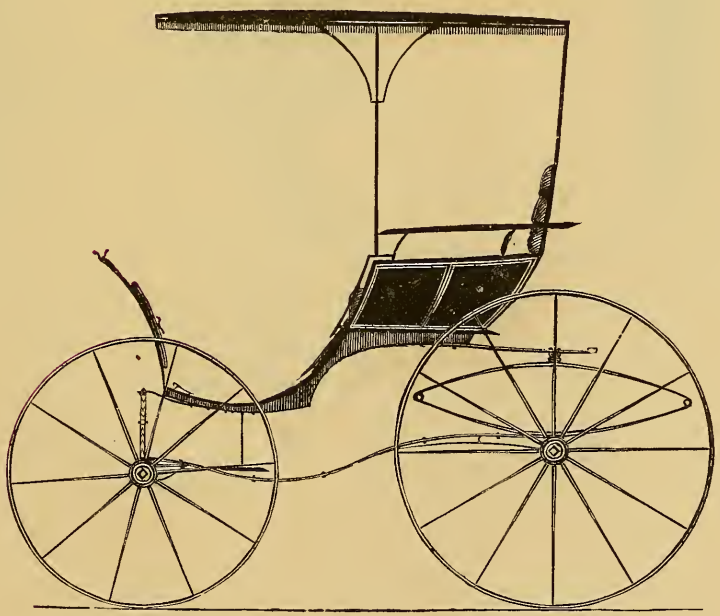
No. 146. Drop Front Phaeton.



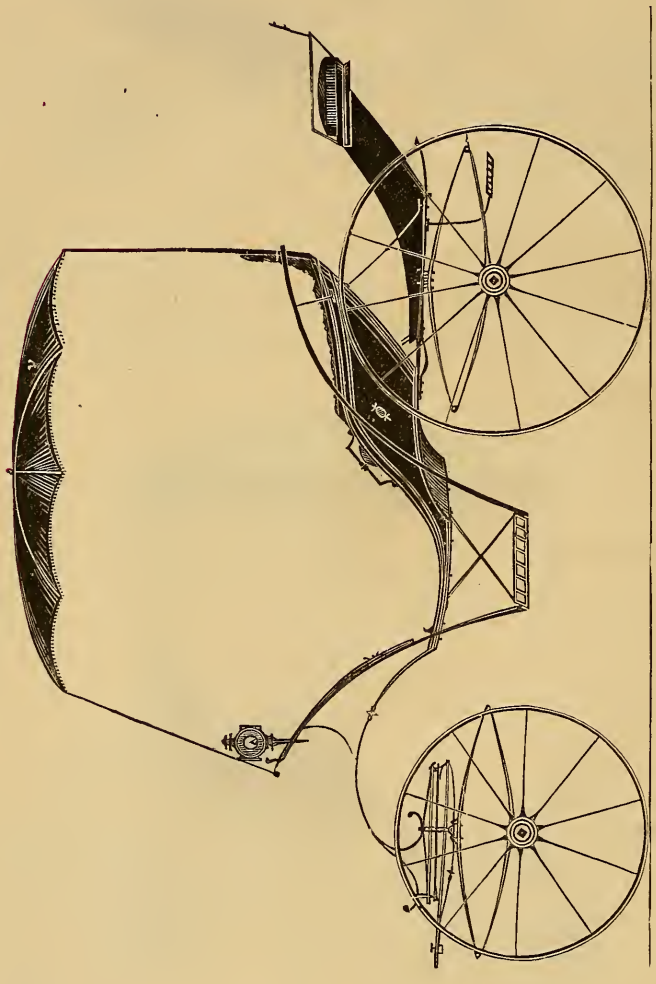
No. 147. Cincinnati Phaeton.



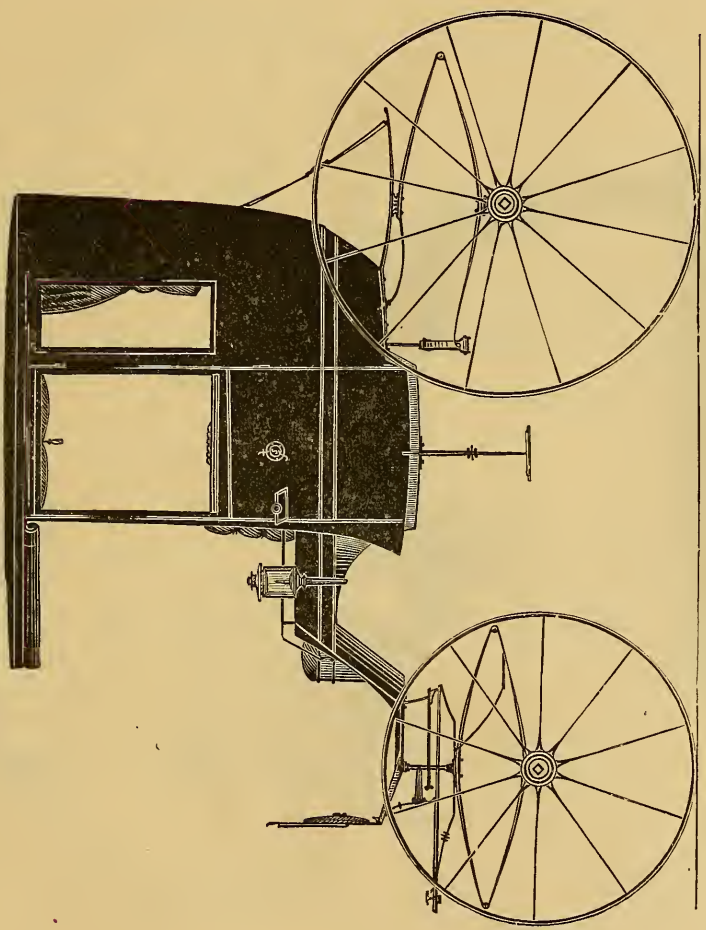
No. 152. Pony Phaeton, without Top.



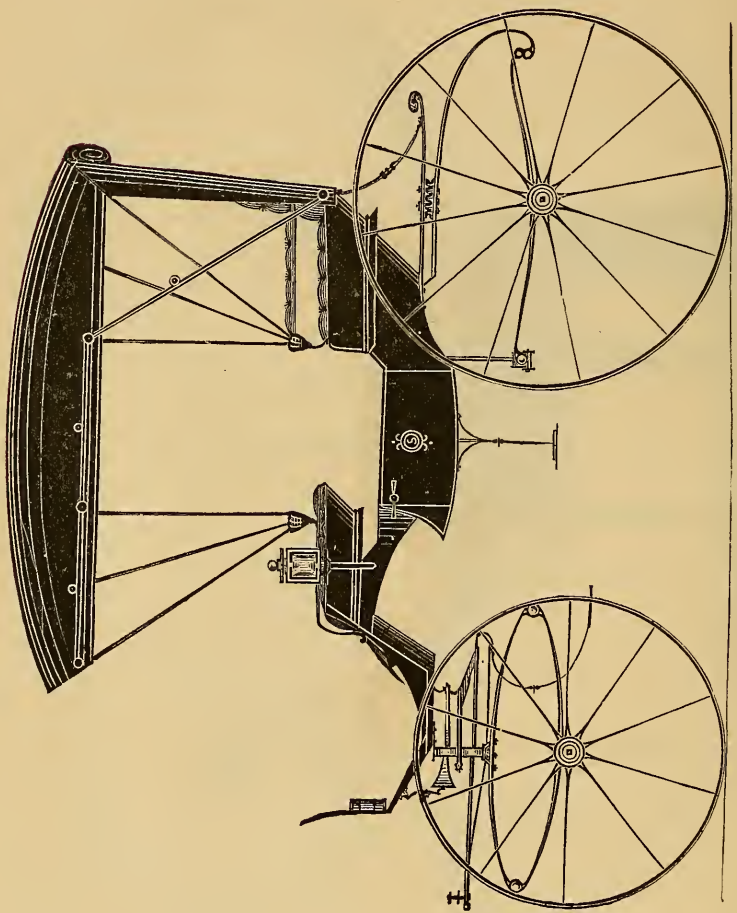
No. 153. Three-spring Phaeton, Standing Top.



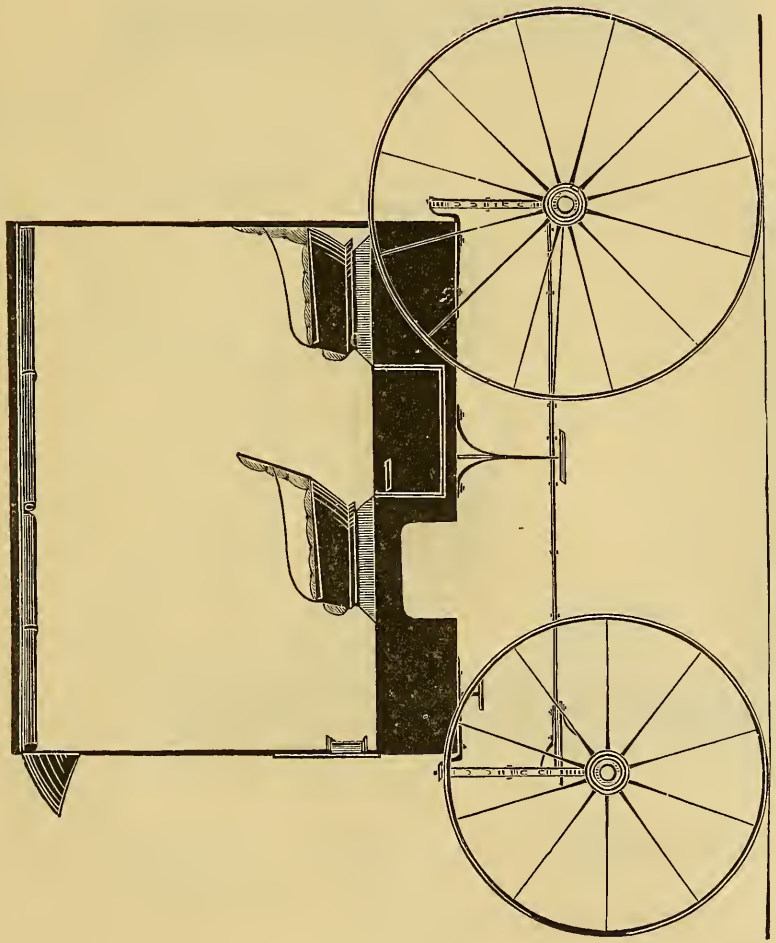
No. 154. Pony Phaeton with Rumble and Canopy.



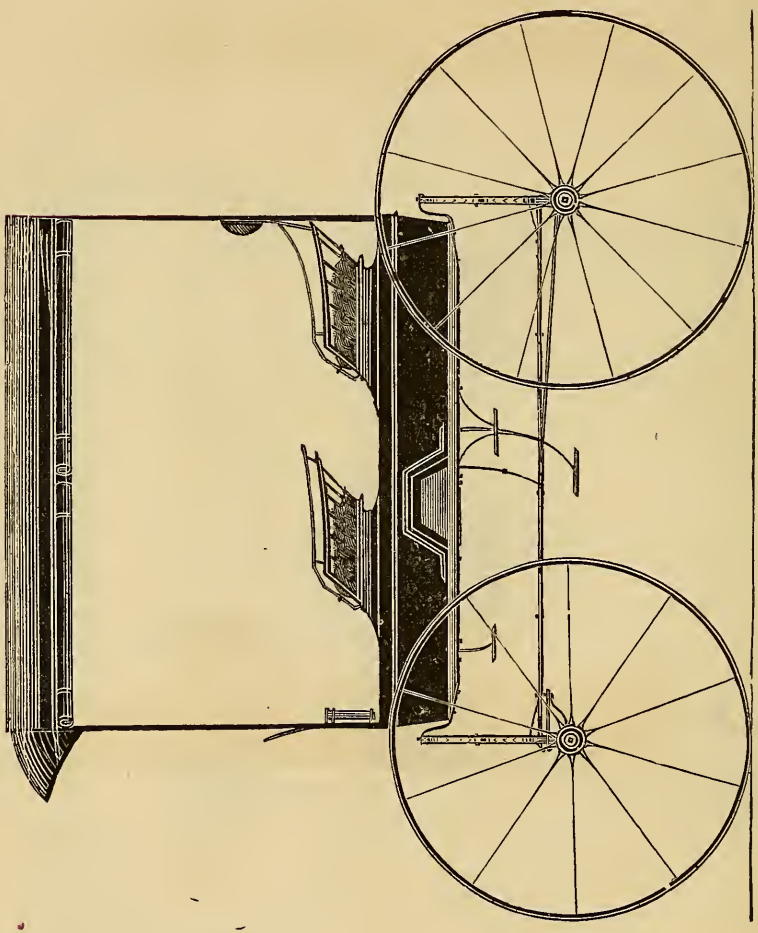
No. 155. Four-Passenger Coupe Rockaway.



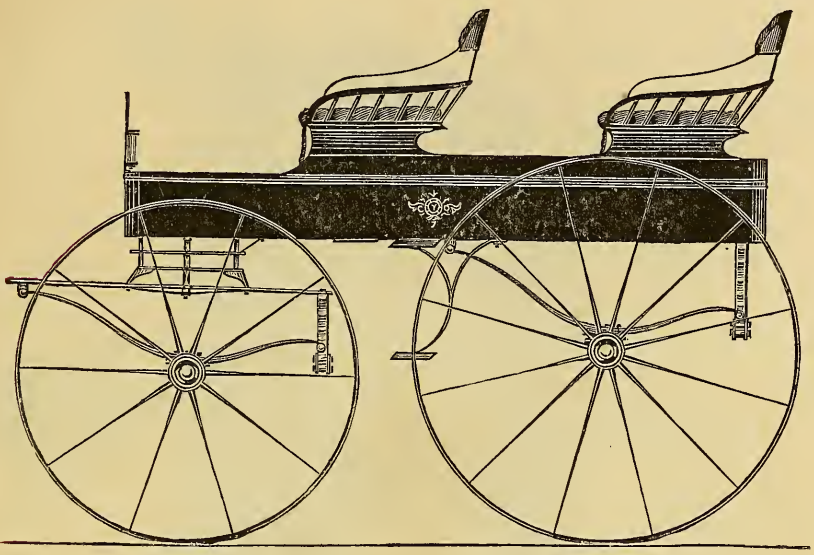
No. 156. Four-Passenger Extension-Top Phaeton.



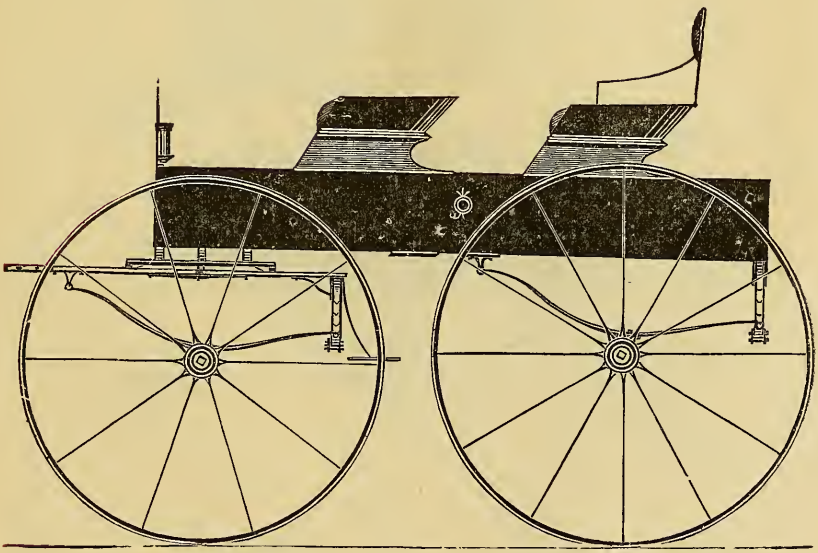
No. 157. Four-Passenger, Cut Under, Depot Wagon.



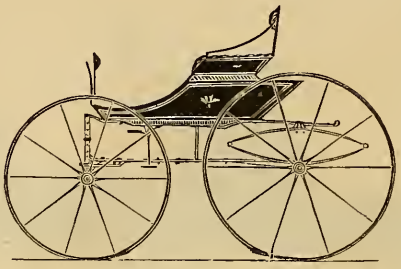
No. 158. Four-Passenger Depot Wagon.



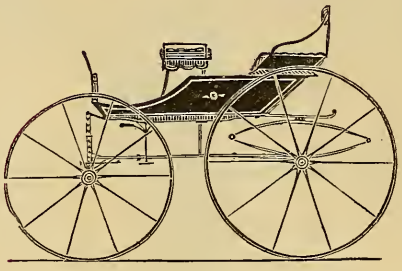
No. 159. Four-Passenger Democrat Wagon.



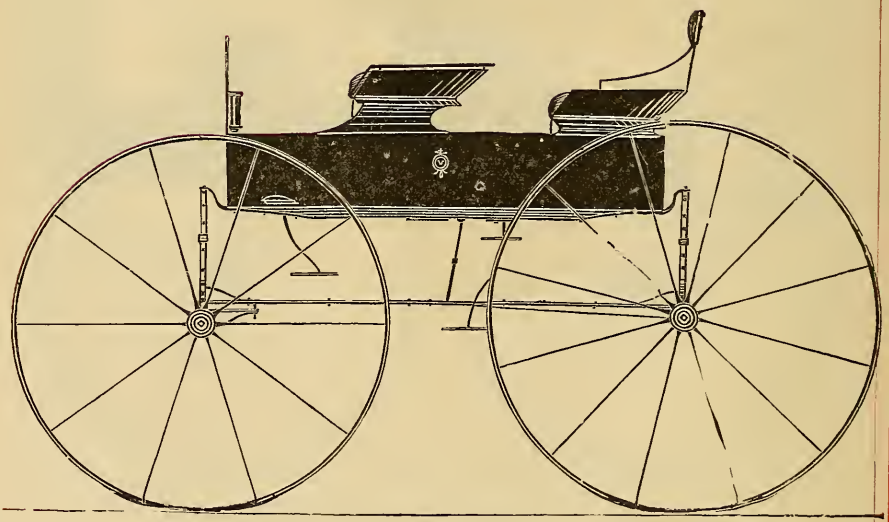
No. 160. Four-Passenger Platform Wagon.



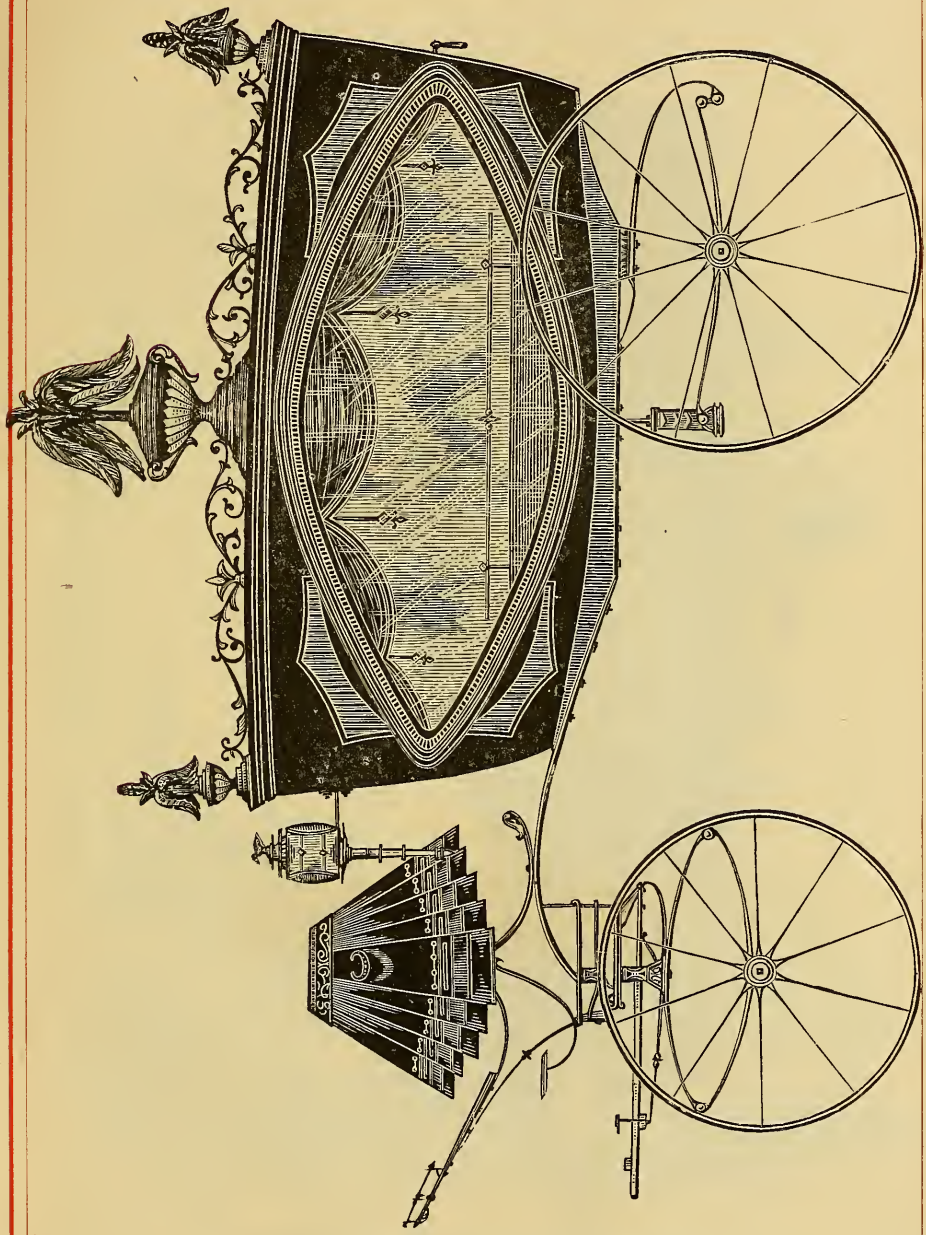
No. 161. Eureka as One Seat.



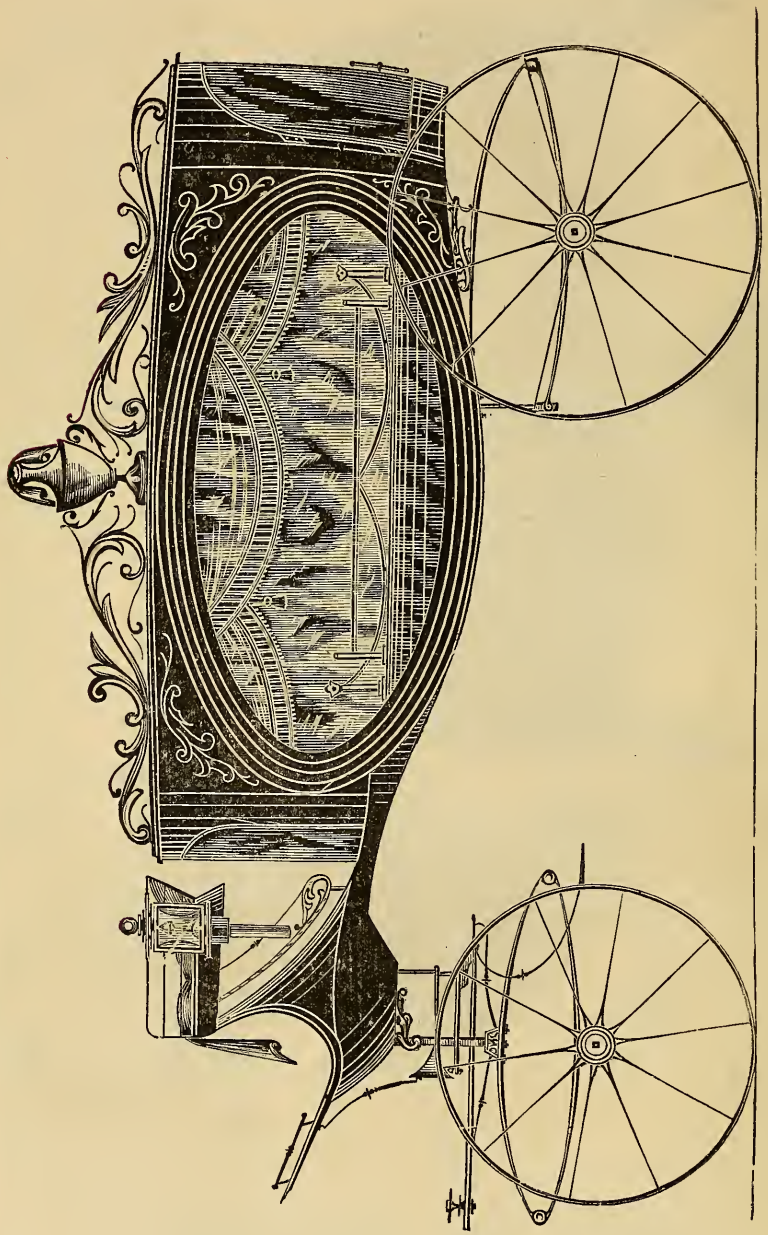
No. 162. Eureka as Two Seat.



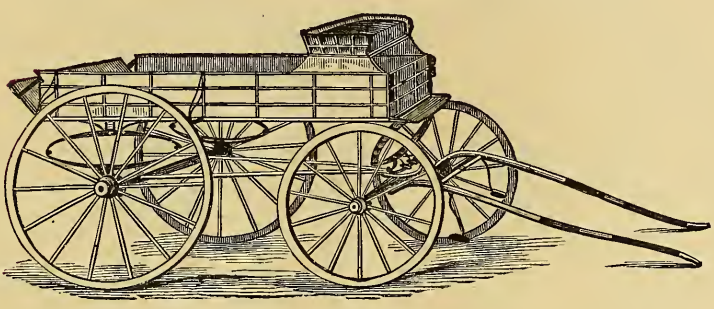
No. 163. Four-Passenger Piano Box Wagon.



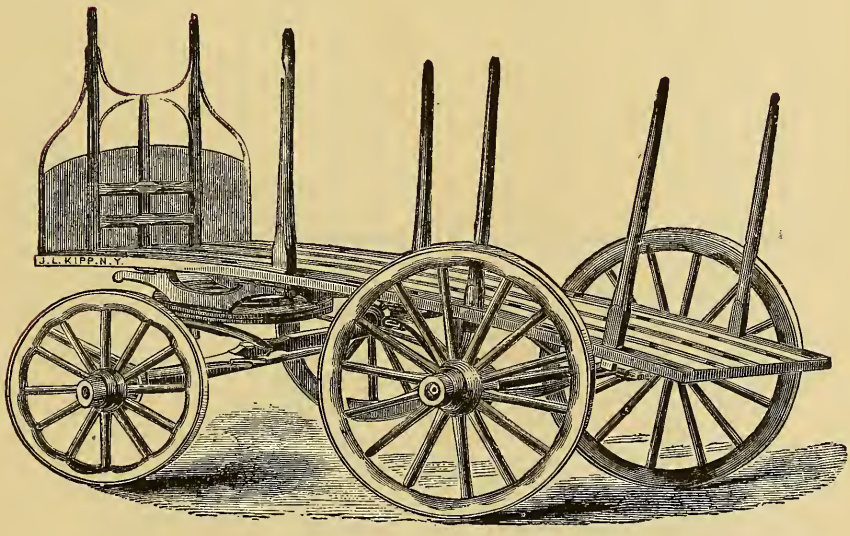
No. 164. Hearse. Elaborate Pattern.



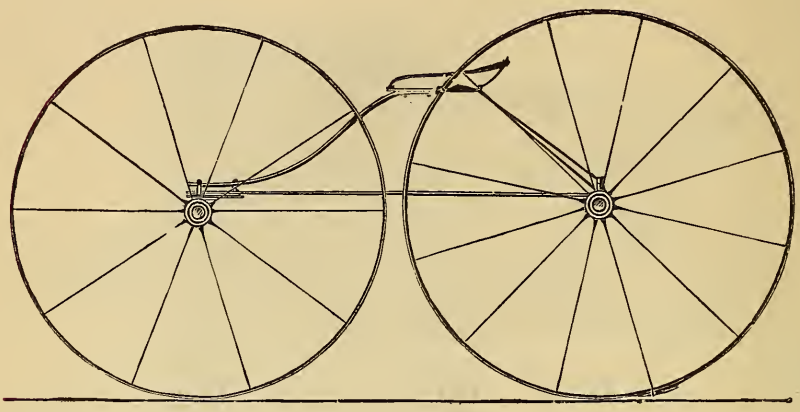
No. 165. Hearse, Elegant Design.



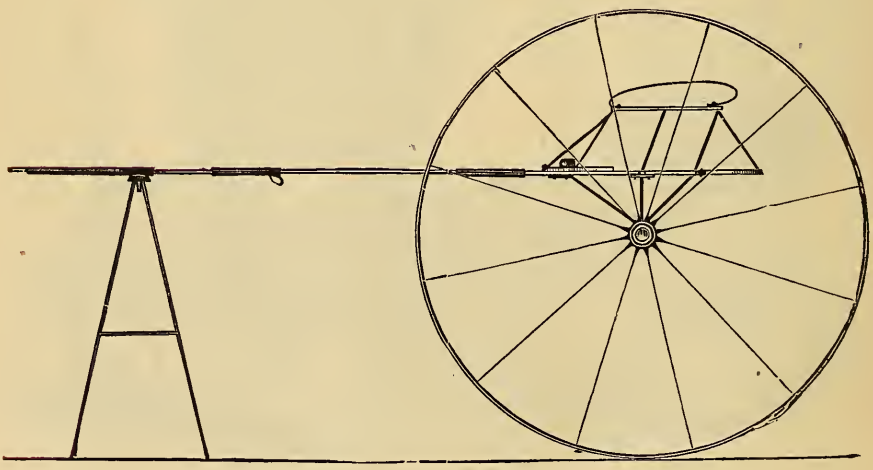
No. 166. Chicago Express Wagon.



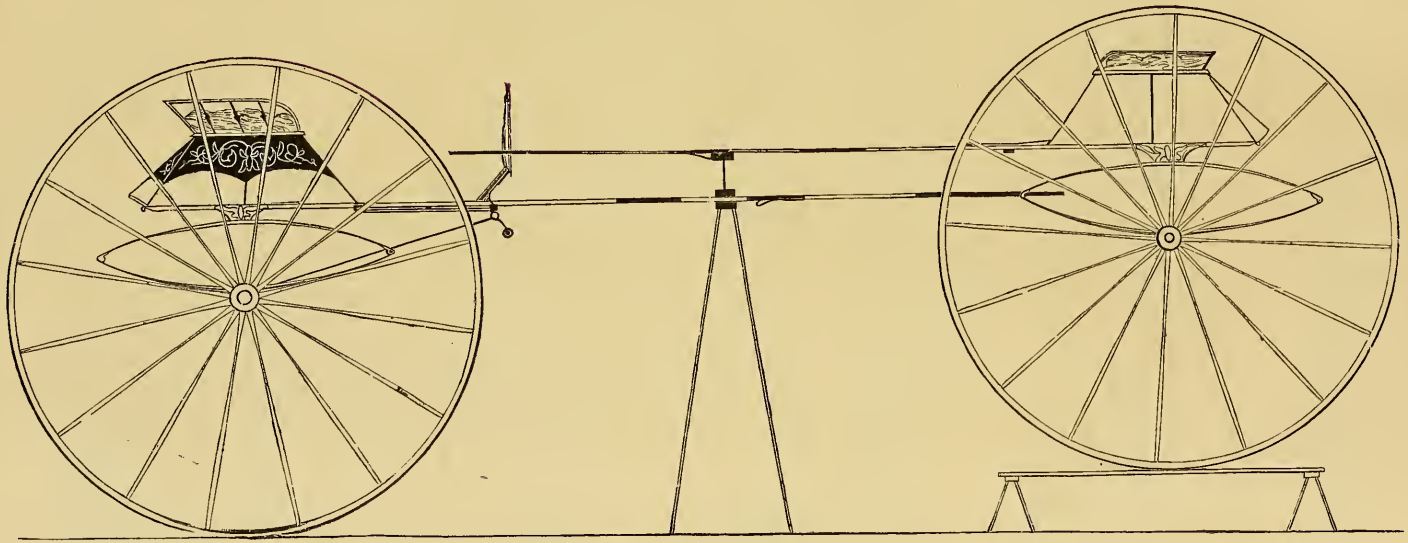
No. 167. Chicago Platform Truck.



No. 168. Skeleton Wagon.



No. 169. Trotting Sulky.



No. 170. Spindle Seat, Fancy Sulky.

No. 171. Low Seat, Fancy Sulky.

APPENDIX.*

IRON.

The foreign substances which iron contains modify its essential properties. *Carbon* adds to its hardness, but destroys some of its qualities, and produces Cast Iron or Steel according to the proportion it contains. *Sulphur* renders it fusible, difficult to weld, and brittle when heated or "*hot short.*" *Phosphorus* renders it "*cold short,*" but may be present in the proportion of $\frac{2}{1000}$ to $\frac{3}{1000}$ without affecting injuriously its tenacity. *Antimony*, *Arsenic* and *Copper* have the same effect as sulphur, the last in a greater degree.

CAST IRON.

The process of making cast iron depends much upon the description of fuel used; whether charcoal, coke, bituminous or anthracite coals. A larger yield from the same furnace, and a great economy in fuel, are effected by the use of a *hot blast.* The greater heat thus produced causes the iron to combine with a larger percentage of foreign substances.

Cast iron for purposes requiring great strength should be smelted with a *cold blast.* *Pig iron*, according to the proportion of carbon which it contains, is divided into *Foundry Iron* and *Forge Iron*, the latter adapted only to conversion into malleable iron; while the former, containing the largest proportion of carbon, can be used either for castings or bars.

There are many varieties of cast iron, differing by almost insensible shades; the two principal divisions are *gray* and *white*, so termed from the color of their fracture. Their properties are very different.

Gray Iron is softer and less brittle than white iron; it is in a slight degree malleable and flexible, and is not sonorous; it can be easily drilled or turned in a lathe, and does not resist the file. It has a brilliant fracture, of a gray, or sometimes a bluish gray color; the color is lighter as the grain becomes closer, and its hardness increases at the same time. It melts at a lower heat than white iron, and preserves its fluidity longer. The color of the fluid metal is red, and deeper in proportion as the heat is lower; it does not adhere to the ladle; it fills the molds well, contracts less, and contains fewer cavities than white iron; the edges of its castings are sharp, and the surfaces smooth and convex. A medium-sized grain, bright gray color, fracture sharp to the touch, and a close, compact texture, indicate a good quality of iron. A grain, either very large or very small, a dull, earthy aspect, loose texture, dissimilar crystals, mixed together, indicate an inferior quality.

Gray iron is used for machinery and ordnance purposes where the pieces are to be bored or fitted. Its tenacity and specific gravity are *diminished* by annealing. Its mean specific gravity is 7.2.

White Iron is very brittle and sonorous; it resists the file and the chisel, and is susceptible of high polish; the surface of its castings is concave; the fracture presents a silvery appearance, generally fine-grained and compact, sometimes radiating or lamellar. When melted it is white, and throws off a great number of sparks, and its qualities are the reverse of those of gray iron; it is, therefore, unsuitable for machinery purposes. Its tenacity is *increased*, and its specific gravity *diminished* by annealing. Its mean specific gravity is 7.5.

* *Compiled from* HASWELL *and other sources.*

Mottled Iron is a mixture of white and gray; it has a spotted appearance; it flows well and with few sparks; its castings have a plane surface, with edges slightly rounded. It is suitable for shot, shells, etc.

A fine mottled iron is the only kind suitable for castings which require great strength, such as beam centres, cylinders and cannon. The kind of mottle will depend much upon the size of the casting.

Besides these general divisions, the different varieties of pig iron are more particularly distinguished by numbers, according to their relative hardness.

No. 1 is the softest iron, possessing in the highest degree the qualities belonging to gray iron; it has not much strength, but, on account of its fluidity when melted, and of its mixing advantageously with old or scrap iron, and with the harder kinds of cast iron, it is of great use to the founder, and commands the highest price.

No. 2 is harder, closer grained, and stronger than No. 1; it has a gray color, and considerable lustre. It is the character of iron most suitable for shot and shells.

No. 3 is still harder than No. 2. Its color is gray, but inclining to white; it has considerable strength, but it is principally used for mixing with other kinds of iron.

No. 4 is *bright* iron; No. 5, *mottled;* and No. 6, *white*, which is unfit for general use by itself.

The qualities of these various descriptions depend upon the proportion of carbon, and upon the state in which it exists in the metal; in the darker kinds of iron, where the proportion is sometimes 7 per cent., it exists partly in the state of graphite or plumbago, which makes the iron soft. In white iron, the carbon is thoroughly combined with the metal, as in steel.

Cast iron frequently retains a portion of foreign ingredients from the ore, such as earths or oxides of other metals, and sometimes sulphur and phosphorus, which are all injurious to its quality. Sulphur hardens the iron, and, unless in a very small proportion, destroys its tenacity.

These foreign substances, and also a portion of the carbon, are separated by melting the iron in contact with air, and soft iron is thus rendered harder and stronger. The effect of remelting varies with the nature of the iron and the character of the ore from which it has been extracted; that from the hard ores, such as the magnetic oxides, undergoes less alteration than that from the hematites, the latter being sometimes changed from No. 1 to *white* by a single remelting in an air furnace.

The color and texture of cast iron depend greatly upon the volume of the casting and the rapidity of its cooling; a small casting, which cools quickly, is almost always white, and the surface of large castings partakes more of the qualities of white metal than the interior.

All cast iron expands at the moment of becoming solid, and contracts in cooling; gray iron expands more and contracts less than other iron.

The contraction is about $\frac{1}{100}$ for gray and strongly-mottled iron, or $\frac{1}{8}$ of an inch per foot.

Remelting iron improves its tenacity; thus, a mean of 14 cases for two fusions, gave, for 1st fusion, a tenacity of 29 284 lbs.; for 2d fusion. 33 790 lbs. For 2 cases—for 1st fusion, 15 129 lbs.; for 2d fusion, 35 786 lbs.

WROUGHT IRON.

Wrought iron is made from the pig iron in a *Bloomery Fire* or in a *Puddling Furnace*—generally in the latter. The process consists in melting it and keeping it exposed to a great heat, constantly stirring the mass, bringing every part of it under the action of the flame until it loses its remaining carbon, when it becomes malleable iron. When, however, it is desired to obtain iron of the best quality, the pig iron should be refined.

Refining.—This operation deprives the iron of a considerable portion of its carbon; it is effected in a *Blast Furnace*, where the iron is melted by means of charcoal or coke, and exposed for some time to the action of a great heat; the metal is then run into a cast-iron mold, by which it is formed into a large broad plate. As soon as the surface of the plate is chilled, cold water is poured on to render it brittle.

The *Bloomery* resembles a large forge fire, where charcoal and a strong blast are used; and the refined metal or the pig iron, after being broken into pieces of the proper size, is placed before the blast, directly in contact with charcoal; as the metal fuses, it falls into a cavity left for that purpose below the blast, where the bloomer works it into the shape of a ball, which he places again before the blast, with fresh charcoal; this operation is generally again repeated, when the ball is ready for the *Shingler.*

The *Puddling Furnace* is a reverbatory furnace, where the flame of bituminous coal is brought to act directly upon the metal. The metal is first melted; the puddler then stirs it, exposing each portion in turn to the action of the flame, and continues this as long as he is able to work it. When it has lost its fluidity, he forms it into balls, weighing from 80 to 100 lbs., which are next passed to the shingler.

Shingling is performed in a strong squeezer, or under the trip-hammer. Its object is to press out as perfectly as practicable the liquid cinder which the ball still contains; it also forms the ball into shape for the puddle rolls. A heavy hammer, weighing from 6 to 7 tons, effects this object most thoroughly, but not so cheaply as the squeezer The ball receives from 15 to 20 blows of a hammer, being turned from time to time as required; it is now termed a *Bloom*, and is ready to be rolled or hammered; or the ball is passed once through the squeezer, and is still hot enough to be passed through the puddle rolls.

Puddle Rolls.—By passing through different grooves in these rolls, the bloom is reduced to a rough bar from three to four feet in length, its name conveying an idea of its condition, which is rough and imperfect.

Piling.—To prepare rough bars for this operation, they are cut, by a pair of shears, into such lengths as are best adapted to the size of the finished bar required; the sheared bars are then piled one over the other, according to the volume required, when the pile is ready for balling.

Balling.—This operation is performed in the balling furnace, which is similar to the puddling furnace, except that its bottom or hearth is made up, from time to time, with sand, it is used to give a welding heat to the piles to prepare them for rolling.

Finishing Rolls.—The balls are passed successively between rollers of various forms and dimensions, according to the shape of the finished bar required.

The quality of the iron depends upon the description of pig iron used, the skill of the puddler, and the absence of deleterious substances in the furnace.

The strongest cast irons do not produce the strongest malleable iron.

For many purposes, such as sheets for tinning, best boiler-plates, and bars for converting into steel, *charcoal iron* is used exclusively; and, generally, this kind of iron is to be relied upon, for strength and toughness, with greater confidence than any other, though iron of superior quality is made from pigs made with other fuel, and with a hot blast. Iron for gun-barrels has been lately made from anthracite hot-blast pigs.

Iron is improved in quality by judicious working, reheating it, and hammering or rolling; other things being equal, the best iron is that which has been wrought the most.

STEEL.

Steel is a compound of Iron and Carbon, in which the proportion of the latter is from 1 to 5 per cent., and even less in some kinds. Steel is distinguished from iron by its fine grain, and by the action of diluted nitric acid, which leaves a black spot upon steel, and upon iron a spot which is lighter colored in proportion to the carbon it contains.

There are many varieties of steel, the principal of which are:

Natural Steel, obtained by reducing rich and pure descriptions of iron ore with charcoal, and refining the cast iron, so as to deprive it of a sufficient portion of carbon to bring it to a malleable state. It is used for files and other tools.

Indian Steel, termed *Wootz*, is said to be a natural steel, containing a small portion of other metals.

Blistered Steel, or Steel of Cementation, is prepared by the direct combination of iron and carbon. For this purpose, the iron in bars is put in layers, alternating with powdered charcoal, in a close furnace, and exposed for seven or eight days to a heat of about 9000°, and then put to cool for a like period The bars, on being taken out, are covered with blisters, have acquired a brittle quality, and exhibit in the fracture a uniform crystalline appearance. The degree of carbonization is varied according to the purposes for which the steel is intended, and the best qualities of iron (Russian and Swedish) are used for the finest kinds of steel.

Tilted Steel is made from blistered steel moderately heated, and subjected to the action of a tilt hammer, by which means its tenacity and density are increased.

Shear Steel is made from blistered or natural steel, refined by piling thin bars into fagots, which are brought to a welding heat in a reverberatory furnace, and hammered or rolled again into bars; this operation is repeated several times to produce the finest kinds of shear steel, which are distinguished by the names of *half shear*, *single shear* and *double shear*, or steel of 1, 2, or 3 *marks*, etc., according to the number of times it has been piled

Cast Steel is made by breaking blistered steel into small pieces, and melting it in close crucibles, from which it is poured into iron molds; the ingot is then reduced to a bar by hammering or rolling. Cast steel is the best kind of steel, and best adapted for most purposes; it is known by a very fine, even, and close grain, and a silvery homogenous fracture; it is very brittle, and acquires extreme hardness, but is difficult to weld without the use of a flux. The other kinds of steel have a similar appearance to cast steel, but the grain is coarser and less homogeneous; they are softer and less brittle, and weld more readily. A fibrous or lamellar appearance in the fracture indicates an imperfect steel. A material of great toughness and elasticity, as well as hardness, is made by forging together steel and iron, forming the celebrated *damasked steel*, which is used for sword-blades, springs, etc.; the damask appearance of which is produced by a diluted acid, which gives a black tint to the steel, while the iron remains white.

Various fancy steels, or alloys of steel with *silver*, *platinum*, *rhodium*, and *aluminum*, have been made with a view to imitating the Damascus steel, wootz, etc.; and improving the fabrication of some of the finer kinds of surgical and other instruments.

Properties of Steel.—After being tempered, it is not easily broken; it welds readily; it does not crack or split; it bears a very high heat, and preserves the capability of hardening after repeated working.

Hardening and Tempering.—Upon these operations the quality of manufactured steel in a great measure depends.

Hardening is effected by heating the steel to a cherry-red, or until the scales of oxide are loosened on the surface, and plunging it into a liquid, or placing it in contact with some cooling substance; the degree of hardness depends upon the heat and

the rapidity of cooling. Steel is thus rendered so hard as to resist the hardest files, and it becomes at the same time extremely brittle. The degree of heat, and the temperature and nature of the cooling medium, must be chosen with reference to the quality of the steel and the purpose for which it is intended. Cold water gives a greater hardness than oils or other fatty substances, sand, wet-iron scales, or cinders, but an inferior degree of hardness to that given by acids. Oil, tallow, etc., prevent the cracks which are caused by too rapid cooling. The lower the heat at which the steel becomes hard, the better.

Tempering.—Steel in its hardest state being too brittle for most purposes, the requisite strength and elasticity are obtained by tempering—or, *letting down the temper*, as it is termed—which is performed by heating the hardened steel to a certain degree and cooling it quickly. The requisite heat is usually ascertained by the color which the surface of the steel assumes from the film of oxide thus formed. The degrees of heat to which these several colors correspond are as follows:

At 430°, a very faint yellow. At 450°, a pale straw color.	Suitable for hard instruments; as hammer faces, drills, etc.
At 470°, a full yellow. At 490°, a brown color.	For instruments requiring hard edges without elasticity; as shears, scissors, turning tools, etc.
At 510°, brown, with purple spots. At 538°, purple.	For tools for cutting wood and soft metals; such as plane-irons, knives, etc.
At 550°, dark blue. At 560°, full blue.	For tools requiring strong edges without extreme hardness; as cold-chisels, axes, cutlery, etc.
At 600°, grayish-blue, verging on black.	For spring-temper, which will bend before breaking; as saws, sword-blades, etc.

If the steel is heated higher than this, the effect of the hardening process is destroyed.

CASE-HARDENING.

This operation consists in converting the surface of wrought iron into steel, by cementation, for the purpose of adapting it to receive a polish or to bear friction, etc.; this is effected by heating iron to a cherry-red, in a close vessel, in contact with carbonaceous materials, and then plunging it into cold water. Bones, leather, hoofs and horns of animals are generally used for this purpose, after having been burned or roasted so that they can be pulverized. Soot is also frequently used.

WOOD, TIMBER, Etc.

Selection of Standing Trees.—Wood grown in a moist soil is lighter, and decays sooner than that grown in dry, sandy soil.

The best timber is that grown in a dark soil intermixed with gravel. Poplar, cypress, willow, and all others which grow best in a wet soil are exceptions.

The hardest and densest woods, and the least subject to decay, grow in warm climates; but they are more liable to split and warp in seasoning.

Trees grown upon plains, or in the centre of forests, are less dense than those from the edge of a forest, from the side of a hill, or from open ground.

Trees (in the United States) should be selected in the latter part of July, or first part of August; for at this season the leaves of the sound healthy trees are fresh and green, while those of the unsound are beginning to turn yellow. A sound, healthy tree is recognized by its top branches being well leaved, the bark even and of a uniform color. A rounded top, few leaves, some of them turned yellow, a rougher bark than common, covered with parasitic plants, and with streaks or spots upon it, indicate

a tree upon the decline. The decay of branches, and the separation of bark from the wood, are infallible indications that the wood is impaired.

Felling Timber.—The most suitable time for felling timber is in midwinter and in midsummer. Recent experiments indicate the latter season and in the month of July.

A tree should be allowed to attain full maturity before being felled. Oak matures at 75 to 100 years and upward, according to circumstances. The age and rate of growth of a tree are indicated by the number and width of the rings of annual increase which are exhibited in a cross section.

A tree should be cut as near to the ground as practicable, as the lower part furnishes the best timber.

Dressing Timber.—As soon as a tree is felled, it should be stripped of its bark, raised from the ground, the sap-wood taken off, and the timber reduced to its required dimensions.

Inspection of Timber.—The quality of wood is in some degree indicated by its color, which should be nearly uniform in the heart, a little deeper toward the centre, and free from sudden transitions of color. White spots indicate decay. The sap-wood is known by its white color; it is next to the bark, and very soon rots.

Defects of Timber.—*Wind-shakes* are circular cracks separating the concentric layers of wood from each other. It is a serious defect.

Splits, checks and cracks, extending toward the centre, if deep and strongly marked, render the timber unfit for use, unless the purpose for which it is intended will admit of its being split through them.

Brash-wood is generally consequent upon the decline of the tree from age. The wood is porous, of a reddish color, and breaks short, without splinters.

Belted timber is that which has been killed before being felled, or which has died from other causes. It is objectionable.

Knotty timber is that containing many knots, though sound; usually of stunted growth.

Twisted wood is when the grain of it winds spirally; it is unfit for long pieces.

Dry-rot.—This is indicated by yellow stains. Elm and beech are soon affected, if left with the bark on.

Large or decayed knots injuriously affect the strength of timber.

SEASONING AND PRESERVING TIMBER.

Timber freshly cut contains about 37 to 48 per cent. of liquids. By exposure to the air in seasoning one year, it loses from 17 to 25 per cent., and when seasoned it yet retains from 10 to 15 per cent.

Timber of large dimensions is improved and rendered less liable to warp and crack in being seasoned by immersion in water for some weeks.

For the purpose of seasoning, timber should be piled under shelter, and be kept dry; it should have a free circulation of air about it, without being exposed to strong currents. The bottom pieces should be placed upon skids, which should be free from decay, raised not less than 2 feet from the ground; a space of an inch should intervene between the pieces of the same horizontal layers, and slats or piling-strips placed between each layer, one near each end of the pile, and others at short distances, in order to keep the timber from winding. These strips should be one over the other, and in large piles should not be less than 1 inch thick. Light timber may be piled in the upper portion of the shelter, heavy timber upon the ground floor. Each pile should contain but one description of timber. The piles should be at least 2½ feet apart.

Timber should be repiled at intervals, and all pieces indicating decay should be removed, to prevent their affecting those which are still sound.

Timber houses are best provided with blinds, which keep out rain and snow, but which can be turned to admit air in fine weather, and they should be kept entirely free from any pieces of decayed wood.

The gradual mode of seasoning is the most favorable to the strength and durability of timber, but various methods have been proposed for hastening the process. For this purpose, *steaming* timber has been applied with success; and the results of experiments of various processes of saturating timber with a solution of *corrosive sublimate* and *antiseptic* fluids are very satisfactory. This process hardens and seasons wood, at the same time that it secures it from dry-rot and from the attacks of worms. *Kiln-drying* is serviceable only for boards and pieces of small dimensions, and is apt to cause cracks and to impair the strength of wood, unless performed very slowly. *Charring* or *painting* is highly injurious to any but seasoned timber, as it effectually prevents the drying of the inner part of the wood, in consequence of which fermentation and decay soon take place.

Timber piled in badly-ventilated sheds is apt to be attacked with the *common-rot*. The first outward indications are yellow spots upon the ends of the pieces, and a yellowish dust in the checks and cracks, particularly where the pieces rest upon the piling-strips.

Timber requires from 2 to 8 years to be seasoned thoroughly, according to its dimensions. It should be worked as soon as it is thoroughly dry, for it deteriorates after that time.

Oak timber loses one-fifth of its weight in seasoning, and about one-third of its weight in becoming perfectly dry. Seasoning is the extraction or dissipation of the vegetable juices and moisture, or the solidification of the albumen. When wood is exposed to currents of air at a high temperature, the moisture evaporates too rapidly, and the wood cracks; and when the temperature is high and sap remains, it ferments, and dry-rot ensues.

Timber is subject to *Common-rot* or *Dry-rot*, the former occasioned by alternate exposure to moisture and dryness. The progress of this decay is from the exterior; hence the covering of the surface with paint, tar, etc., is a preservative.

Painting and charring green timber hastens its decay.

Dry or Sap-rot is inherent in timber, and it is occasioned by the putrefaction of the vegetable albumen. Sap wood contains a large proportion of fermentable elements. Insects attack wood for the sugar or gum contained in it, and *Fungi* subsist upon the albumen of wood; hence, to arrest dry-rot, the albumen must be either extracted or solidified.

In the seasoning of timber naturally there is required a period of from 2 to 4 years. Immersion in water facilitates seasoning by solving the sap.

The most effective method of preserving timber is that of expelling or exhausting its fluids, solidifying its albumen, and introducing an antiseptic liquid.

The strength of impregnated timber is not reduced, and its *resilience* is improved.

In desiccating timber by expelling its fluids by heat and air, its strength is increased fully 15 per cent.

In coating unseasoned timber with creosote, tar, etc., the fluids are retained, and decay facilitated thereby.

When timber is saturated with creosote, tar, antiseptics, etc., it is also preserved from the attack of worms. Jarrow wood, from Australia, is not subjected to their attack.

The condition of timber, as to its soundness or decay, is readily recognized when struck a quick blow.

Timber that has been for a long time immersed in water, when brought into the air and dried, becomes brashy and useless.

Timber may be partially seasoned by being boiled or steamed.

TABLES OF

MONEY, WEIGHT AND MEASURE,

OF THE

PRINCIPAL COMMERCIAL COUNTRIES IN THE WORLD,

The value of the Money in each given in the United States Federal Currency, as also usually in English Sterling Currency; and of the Weights and Measures in the American (or English) weights and measures.

[*From* ELIHU BURRITT'S *Year-Book of the Nations.*]

a, signifies of, or containing.

UNITED STATES.

MONEY.

The national currency of the United States is termed the Federal Currency, and is the most convenient of that of any nation on the globe, its different denominations proceeding in a decimal proportion.

10 mills	=	1 cent, c.
10 cents	=	1 dime, d.
10 dimes	=	1 dollar, $
10 dollars	=	1 eagle, e.

WEIGHT.

Avoirdupois Weight.

16 drams	=	1 ounce, oz.
16 oz.	=	1 pound, lb.
28 lbs.	=	1 quarter, qr.
4 qrs.	=	1 hundred, cwt.
20 cwt.	=	1 ton
175 troy pounds	=	144 pounds, avoir.
1 pound troy	=	5760 grains
1 lb. avoir.	=	7000 grains

Troy Weight.

24 grains, gr.	=	1 pennyweight, dwt.
20 dwt.	=	1 ounce, oz.
12 oz.	=	1 pound, lb.

Gold, silver and jewels are weighed by this weight.

Apothecaries' Weight.

20 grains	=	1 scruple, ℈
3 ℈	=	1 dram, ʒ
8 ʒ	=	1 ounce, ℥
12 ℥	=	1 pound, lb.

This weight is used by apothecaries and physicians in *compounding* medicines; but drugs and medicines are bought and sold by *avoirdupois* weight. The *pound* and *ounce* in this weight are the same as the *troy* pound and ounce.

MEASURE.

Long Measure.

3 barleycorns	=	1 inch
12 inches	=	1 foot
3 feet	=	1 yard
5½ yards	=	1 rod, perch or pole
40 rods or perches	=	1 furlong
8 furlongs	=	1 mile
6 feet	=	1 fathom
4 inches	=	1 hand
3 miles	=	1 league
60 naut. or geog. miles	=	1 degree
69½ statute miles	=	1 degree, nearly
9 inches	=	1 span
18 inches	=	1 cubit

Long Measure is used in measuring distances, where length only is considered.

m. or l., more or less.

Square Measure.

144 sq. inches	=	1 sq. foot
9 sq. feet	=	1 sq. yard
30¼ sq. yards or 272¼ sq. feet	=	1 sq. rod, perch or pole
40 sq. rods	=	1 rood
4 roods or 160 sq. rods	=	1 acre
640 acres	=	1 sq. mile

Square Measure is used in measuring surfaces, as land, flooring, plastering, &c.

Cubic Measure.

1728 cu. inches	=	1 cu. foot
27 cu. feet	=	1 cu. yard
40 feet of round or 50 feet of hewn timber	=	1 ton, or load
42 cubic feet	=	1 ton of shipping
16 cu. feet	=	1 foot of wood, or a cord foot
8 cord feet, or 128 cubic feet	=	1 cord

Cubic Measure is used in measuring solid bodies having *length*, *breadth* and *thickness*; as timber, stone, boxes of goods, the capacity of rooms, ships, &c.

Cloth Measure.

2¼ inches	=	1 nail.
4 nails	=	1 quarter.
4 quarters	=	1 yard.
3 quarters	=	1 ell Flemish.
5 quarters	=	1 ell English.
6 quarters	=	1 ell French.

Is used in buying and selling cloth, ribbons, &c.

Wine Measure.

4 gills	=	1 pint.
2 pints	=	1 quart.
4 quarts	=	1 gallon.
42 gallons	=	1 tierce.
1½ tierce, or 63 gal.	=	1 hogshead.
1⅓ hogshead or 84 gal.	=	1 puncheon.
1⅓ puncheon, or 126 gal.	=	1 pipe.
2 pipes	=	1 tun.
231 cubic inches	=	1 gallon.
10 gallons	=	1 anker.
18 gallons	=	1 runlet.
31½ gallons	=	1 barrel.

Wine, spirits, cider, vinegar, oil, honey, etc., are measured and sold by this measure.

Dry Measure.

2 pints	=	1 quart, qt.
4 quarts	=	1 gallon, gal.
2 gallons	=	1 peck, pk.
4 pecks	=	1 bushel, bu.
36 bushels	=	1 chaldron, ch.
4 bushels in England	=	1 coom.
2 cooms	=	1 quarter.
5 quarters	=	1 wey.
2 weys	=	1 last.

A gallon, dry measure, contains 268 4-5 cu. in. This measure applies to all goods that are not liquid and are sold by measure, as corn, fruit, salt, coal, etc.

Measuring Distances.

7 92-100 inches	=	1 link.
25 links	=	1 pole.
100 links	=	1 chain.
10 chains	=	1 furlong.
8 furlongs	=	1 mile.

Used by engineers, surveyors, etc.

Time.

60 seconds	=	1 minute.
60 minutes	=	1 hour.
24 hours	=	1 day.
7 days	=	1 week.
4 weeks	=	1 months.
13 months, 1 day, 6 hours or 365 days, 6 hours	=	1 Julian year.
12 calendar months	=	1 year.

Used for computing time.

Circular Motion.

60 seconds	=	1 prime minute.
60 minutes	=	1 degree, °.
30 degrees	=	1 sign, s.
12 signs or 360 degrees	=	The whole great circle of the zodiac.

Used in measuring latitude and longitude, etc.

GREAT BRITAIN.

(PRINCIPAL COMMERCIAL CITY, LONDON.)

Money.

By the usages of bankers for ages, the pound sterling has been valued by the old Spanish Carolus pillar dollar, now entirely out of circulation in Europe and America; of these, $4.44 4-9 were equivalent to the pound sterling.

This rate originally represented the true par of exchange between the two countries. In 1834 the eagle was reduced in weight to 258 grains (see Tables of Coins of U. S.), and now contains 232-2 grains pure gold.

The English sovereign is the coined piece of which the pound sterling is the money of account, and contains 113.001 grains pure gold.

Standard weight of sovereign, grains	123,274
Alloy, 1-12th part	10,273
Fine gold in the sovereign	113,001

By the proportion—

232.2 grains : 113,001 grains :: $10,

we find that the eqivalent of the pound sterling is $4.8665; and allowing for the wear of coin, we have $4.84, the value established by Congress in 1842, and the rate at which duties are estimated in the Custom-Houses.

It has been found convenient to retain the *old* value as the basis of exchange, and to express the present exchangeable value by a *premium* on this basis. It requires the addition of 9 per cent. to make the Custom-house value, and the addition of about 9½ per cent. to equal the intrinsic value, of a pound sterling in our currency.

Old par value of £1	$4.444
9 per cent. premium	.399
Custom-House value,	$4.843
Old par value.	$4.4444
9½ per cent. premium,	.4222
Intrinsic value,	$4.8666

Exchange quotations refer to the old par. When, therefore, exchange is quoted at about 9½ per cent. premium there is fact no real premium, but the true par has been attained. When nothing is said to the contrary, the quotations are for bills at *usance*, or 60 days' sight and 3 days of grace, which, at 6 per cent. interest, involves a loss of more than 1 per cent. besides the time of transportation. On the other hand, 1 per cent. is about the cost, including freight, insurance, etc., of shipping gold; and as one of these items balances the other, the real par of exchange on England is 9½ per cent., at which rate it is as well, or better, to remit good 60-day bills as specie.

4 farthings, qr.	=	1 penny, d.
12 pence,	=	1 shilling, s.
20 shillings	=	1 pound, £.
A sovereign	=	20 shillings.
A guinea	=	21 "
A crown	=	5 "
A groat	=	4 pence.

The farthing is an imaginary coin; the penny, copper; the sixpence, shilling and crown, silver; sovereign and guinea, gold.

The English Tables of Weights, Measures, Time, etc., are the same essentially as the American.

The value of the Pound Sterling in the following Tables is put at $4.84.

AUSTRIA.

(*Chief Commercial City*, VIENNA.)

MONEY, in Silver.

fl. krt.	£ s. d.	$ c. m.
10 0	= 1 0 0	= 4 84 0
0 30	= 0 1 0	= 0 24 2
0 2½	= 0 0 1	= 0 02 0 2-12
7 0	= 0 13 6	= 3 26 7
4 40 or ducat	= 0 9 4	= 2 25 8 8-12
1 0 silver florin	= 0 2 0	= 0 48 4
2 0 or 1 dollar	= 0 4 0	= 0 96 8
0 20 or 1 zwanziger	= 0 0 8	= 0 16 1 4-12

1 florin is equal to 60 kreutzers.

WEIGHTS AND MEASURES.

AUSTRIAN.		ENGLISH.
100 commercial lbs.	=	123.6 lbs. avoirdp.
1 staro	=	2.34 Winch. bush.
1 polonick	=	0.861 ditto.
1 eimer	=	15 wine gallons
1 barile	=	173½ ditto
1 ell woolen measure	=	26.6 in.
1 ell silk "	=	25.2 in.

Or more particularly—

WEIGHT.

AUSTRIAN.		ENGLISH.
100 commercial lbs.	=	123.6 lbs. avoirdp.
1 lb.	=	4 vindlinge
1 vindlinge	=	4 unzen
1 unzen	=	2 loth
1 loth	=	4 quintl.
1 stone	=	20 lbs.
1 sanne	=	275 lbs.

MEASURE.

1 foot	=	12½ inches
1 nult	=	4⅝ miles

GRAIN.

64 moasel	=	1 metz
30 metz	=	1 muth
1 muth	=	50⅝ bush. Eng.

BAVARIA AND BADEN.

(*Principal Commercial City* AUGSBURG.)

MONEY.

fl. krt.	£ s. d.	$ c. m.
12 0 at par	= 1 0 0	= 4 84 0
0 36	= 0 1 0	= 0 24 2
0 3	= 0 0 1	= 0 02 0 2-12
10 0 gold 10 guildr. piece	= 0 16 8	= 4 03 3 4-12
5 0 gold 5 do. do.	= 0 8 4	= 2 01 6 8-12
3 30 silver 3½ flor. piece	= 0 5 10	= 1 41 1 8-12
5 35 or ducat	= 0 9 3	= 2 23 8 6-12
2 42 or crown thaler	= 0 4 4	= 1 04 8 8-12
1 0	= 0 2 8	= 0 40 3 4-12

1 florin is equal to 60 kreutzers.

Books are kept in Gulden, a 60 kreutzer of the 20 gulden fuss, so called because the Cologne mark of fine silver is worth only 60 fl. Augsburg currency, while all other South German States reckon on the 24 golden fuss.

COIN.—Gold (old). 1 Caroline=18s. 6d. English =$4.44.
½ Caroline = 9s. 3d. English=$2.22
1 double max d'or=24s. 4d. English=$5.84.
1 max d'or=12s. 2d. English=2.92.
1 ducat (new)=9s. 4d. English=$2 24.
Silver pieces of 3½ gulden, 1 gulden, ½ gulden, 1 kreutzer, 3 kreutzer, all in the 24 golden fuss.

WEIGHT.

1 pound=560 grammes French=1¼ pound avoirdupois.
1 cwt.=100 pounds=3,200 loth=12,800 quent.
1 Augsburg mare=16 loth=64 quent=256 pfenning=3,643 grains troy English.

MEASURE.

The foot=11½ inches English.
1 ruthe=10 feet=120 zoll or inches=1440 lines.
1 ell=2 41-48 feet=33¾ inches English.
1 klafter=6 feet=5¾ feet English.

FOR CORN.—1 scheffel=6 bushels 1 gallon English.
1 scheffel=6 metz=12 viertel=48 maas.

FOR LIQUORS.—Wine, 1 eymer=60 maas.
Beer, 1 " =60 "
1 maas=1 7-8 pints English.

BELGIUM.

(*Principal Commercial City* ANTWERP.)

MONEY (at par.)

fr.	cts.		£	s.	d.		$	c.	m.	
25	0	=	1	0	0	=	4	84	0	
1	25	=	0	1	0	=	0	24	2	
0	10	=	0	0	1	=	0	02	0	2-12
25	0 or 1 gold Leopold	=	0	19	10	=	4	79	9	8-12
10	0 or 10 franc piece	=	0	7	10	=	1	89	5	8-13
5	0 or 5 franc piece	=	0	3	11	=	0	94	7	10-12
1	0	=	0	0	9½	=	0	19	1	7-12

1 franc is equal to 100 centimes.
Weights and measures the same as in France.

BRAZILS.

(*Principal Commercial City*, RIO DE JANEIRO.)

MONEY.

reis.		£	s.	d.		$	c.	m.
6400 or gold piece	=	1	15	9	=	8	65	1 6-12
4000 or gold piece of	=	1	0	0	=	4	84	0
1200 or silver piece of	=	0	4	2	=	1	00	8 4-12
960 "	=	0	4	1	=	0	98	0 4-12
640 "	=	0	2	9	=	0	66	5 6-12
320 "	=	0	1	4	=	0	32	2 8-12
200 "	=	0	0	8	=	0	16	1 4-12

1 mil reis is equal to 1000 reis.

The unit is the reis as in Portugal.
COIN.—Gold dobra a 12,800 reis=$18.
Meia dobra a 6.400 reis=$9.
Moeda a 4000 reis=$5 75
Silver.—Pieces of 1200 reis=$1; 400 reis=$0.33.
Pieces of 100 reis=$0.08.
Bank notes are worth less than specie by about one-third.
Exchange on London, 30d. sterling per milrea in bank notes.
Exchange on Paris. fr. 3.15 to 3.20 per 1000 reis.

WEIGHT.

1 quintal=4 arrobas a 32 arratels, (pounds).
1 arratel (lb)=11⅓ oz. avdp.
1 quintal=91⅛ lb. avdp.
Gold and silver weight is the arratal a 2.
Marcos a 8 oncas a 8 oitavas a 72 granos.
1 marco=7 oz. 7 4-7 dwts. troy.

Diamonds, emeralds, rubies, pearls etc. are sold by the quilate. Topazes, by the oitava a 3 escrupulos a 3 quilates a 4 granos.
1 oitava=1 oz. 19 9-10 dwts. troy.
1 quilate=4 13-30 dwts. troy.

MEASURE.

1 pe (foot)=1 foot English.
1 palmo=9 ½ inches Eng.
1 braca=2 varas=3 ⅓ covados=10 palmas.
1 braca=2⅔ yards Eng.
1 legoa (mile)=4¾ miles Eng.
CORN, RICE, COFFEE, &c.—1 mayo=15 fanegas, each fanega=4 alqueires.
1 mayo=22 ½ bushels Eng.
1 fanega=1 1¾ gallons.
WINE.—The same as in Portugal.

BREMEN.

(*One of the Four Free Cities of Germany.*)

MONEY.

rigdl.	grosch.		£	s.	d.		$	c.	m.
6	6	=	1	0	0	=	4	84	0
0	24	=	0	1	0	=	0	24	2
1	0 or gold rigxdal	=	0	3	4	=	0	80	6 8-12
0	36 or 36 groat piece	=	0	1	6	=	0	36	3
5	24 or Louis-d'or	=	0	16	0	=	3	87	2

1 thaler is equal to 72 groten.

BRUNSWICK & HANOVER.

(*Principal Commercial Cities*, BRUNSWICK *and* HANOVER.)

MONEY.

tl.	grs.	pfn.		£	s.	d.		$	c.	m.
6	16	0	=	1	0	0	=	4	84	0
0	8	0	=	0	1	0	=	0	24	2
0	0	10	=	0	0	1	=	0	02	0 2-12
10	0	0 dble.George-d'or	=	1	12	4	=	7	72	4 8-12
5	0	0 or single "	=	0	16	2	=	3	91	3 4-12
1	0	0	=	0	3	0	=			
0	1	0 or 12 pfennings	=	0	0	1¼	=	0	02	5 5-24

1 thaler is equal to 24 groschen.

CHINA.

(*Principal Commercial City*, CANTON.)

MONEY.

The Chinese reckon in taels, a 10 mace, a 10 candarin, a 10 cash.
1 tael=6s. 6d.=$1.56.
COIN.—They only have the cash or li. All other are imaginary. They use the piasters of Spain at 72 candarins. The East India Company take the tael only at 6s. 720 taels=1,000 dollars of Spain.
The exchange on London is 4s. 8d. more or less, for one Spanish dollar.

WEIGHT.

1 pecul=100 cattys (gin), a 16 taels (lyang), a 10 mazas (tachen), or 10 candarins (twin), a 10 cash (li).
1 pecul = 133 1-3 pounds avoirdupois.
1 catty = 1 1-3 pound "
1 tael = 1 1-3 ounce "
1 catty (also the weight for gold and silver) =1 pound 7 3-5 ounces troy English; 1 tael=579 4-5 grains troy English.
The assay of gold and silver is done by 100 parts called toques. Silver must be 80-100 pure.

MEASURE.

The covid=14 5-8 inches English.
1 covid=10 punts.
The Chinese use 4 different feet:

For mathematics	=	13 1-8 inches English.
For builders	=	12 1-15 "
For engineers	=	12 2-3 "
For trade	=	13 1-3 "

1 li=180 fathoms of 10 feet of the engineers=2-5 of an English mile.

DENMARK.

(*Principal Commercial City*, COPENHAGEN.)

MONEY.

rigsd.	skil.		£	s.	d.		$	c.	m.
9	16	=	1	0	0	=	4	84	0
0	44	=	0	1	0	=	0	24	2
0	3¾	=	0	0	1	=	0	02	0 2-12
7	50 or 1 Christian d'or	=	0	16	3	=	3	93	2 6-12
2	0 or 1 species silver	=	0	4	4	=	1	04	8 8-12
1	0	=	0	2	2	=	0	52	4 4-12
0	16 or 1 mark	=	0	0	4½	=	0	09	1

1 rigsb. daler is equal to 96 skillings.
2 rigsbank daler=1 specie daler=3 mark banco in Hamburg.
1 rigsbank daler=2s. 3d. English.
1 skilling=1 farthing=half a cent American.

Bank notes in specie daler are freely taken—100 specie daler for 200 rigsbank daler.

They draw generally on Hamburg at sight or 14 days after date, and the exchange on London is 9½ rigsbank daler for £1 sterling. Exchange on Paris (rarely) from fr. 2.60 to fr. 2.70 per rigsbank daler.

WEIGHT.

1 pound=1 pound 1 5-8 oz. avoirdupois.
1 pound=16 ounces=32 loth=128 quents.
1 ship pound=320 pounds.
1 last=16½ do. or 52 cwt. of 100 pounds.

Gold and silver are sold by the pound=2 marks=16 ozs.=512 orts=8192 es. 1 mark=7 ozs. 4 1-5 dwts. Troy.

MEASURE.

1 foot=12 1-3 inches English.
1 ell=24 2-3 inches English.
1 mile=4 2-3 miles English.

FOR CORN.—1 toende=8 skieps=32 viertels.
1 toende=30 gallons 4½ pints English.
1 skiep=3 gallons 6½ pints English.
1 last=22 toen des.

EAST INDIES.

(*Principal Commercial Cities*, BOMBAY, BENGAL, CALCUTTA, *and* MADRAS.)

rup's.	ann.	pi.		£	s.	d.		$	c.	m.
10	8	0	=	1	0	0	=	4	84	0
0	8	4	=	0	1	0	=	0	24	2
0	0	8	=	0	0	1	=	0	02	0 2-12
16	0	0 gold mohur	=	1	9	0	=	7	01	8
1	0	0 rupee sicca	=	0	1	10½	=	0	45	3 9-12
0	8	0 half rupee	=	0	0	11¼	=	0	22	6 21-24

1 rupee is equal to 8 annas or 96 pice.

More particularly—

CALCUTTA. MONEY.

The Company's rupee=15-16 sicca rupee=1s. 11d. =$0.46.
1 rupee=16 anas; 1 ana=12 pice
COIN.—Gold: 1 mohur=15 rupees=33s. 2d. English=$8.02.6 4-12. Silver: 1 sicca rupee=2s. English=$0.48.4.

WEIGHT.

1 maund (factory maund), a forty seers, a 16 chattacks
1 maund=74 pounds 10 ounces avoirdupois.
1 seer=29 7-8 ounces avoirdupois. The bazaar weight is 10 per cent. heavier.
1 sicca=10 massa a 32 grains, or 4 punkhos.
1 sicca=178⅔ grains troy Eng.

MEASURE.

1 cubit=18 inches English. 1 guz=1 yard Eng.
1 coss=4,000 cubits=1 ⅛ mile English.

Corn is sold by the khahoon of 40 maunds or 16 soallis a 20 pallies. 1 pallie=9½ pounds avoirdupois.

MADRAS. MONEY.

The same as Calcutta.

WEIGHT.

1 candy=20 maunds=160 vis—6,400 pollams.
1 candy=500 lbs. avoirdupois.

MEASURE.

Long measure the same as Calcutta.

FOR CORN—1 garee=400 mercals a 8 puddys or 84 allocks.
1 garee=135 bushels.

BOMBAY. MONEY.

1 rupee=100 reas. Value as in Calcutta.

Exchange on London, 2s., more or less, for 1 Company's rupee.

WEIGHT.

1 candy=20 maunds a 40 seers a 30 pice.
1 candy=560 lbs. avdp.

MEASURE.

1 covid=18 inches English.

FOR CORN.—1 candy=8 parahas a 16 adowlies.
1 candy=24½ bushels.

EGYPT.

(*Principal Commercial City*, ALEXANDRIA.)

MONEY (at par.)

piast.	par.		£	s.	d.		$	c.	m.
97	20	=	1	0	0	=	4	84	0
5	0	=	0	1	0	=	0	24	2
0	17	=	0	0	1	=	0	02	0 2-12
50	0 gold new sequin	=	0	10	4	=	2	50	0 8-12
12	0 silver new piast.	=	0	3	4	=	0	80	6 8-12
4	0 silver grush.	=	0	1	2	=	0	28	2 4-12
1	0 piaster	=	0	0	2½	=	0	05	0 5-12

Wholesale payments are made in purses of 500 current piasters, chiefly in Span. dollars or piasters. 1 Sp. dollar=20 Egypt. piast.

1 piaster in Alexandria has 40 medinis or paras, or 100 good or 120 current aspers.
In Cairo 1 piaster=80 aspers or 33 paras.

COIN.—Ducatillo a 10, griscio a 30, piaster a 40, mahouib a 90, and zumabob a 120 paras. Also, zenzerli a 107, and mecchini a 146 zedinis.

Cotton is sold by cantaros. 1 cantaro=115 lb. Eng.

Coffee and Cotton are invoiced in Span. dollars. Other goods in Egyptian Piasters.

Exchange on London, 80 piasters, more or less, for £1 sterling.
Exchange on Paris, 315 a 320 per fr. 100.

WEIGHT.

1 cantaro a 100 rotoli.

The rotoli differ. There are rotolo forforo=15 oz.; rotolo zauro=33⅓ oz.; rotolo zadino=21 5-16 oz.; rotolo mina=28 5-7 oz.

The quintal of coffee in Cairo=103 3-5 lb. Eng.
1 oka=400 drachmas a 16 carat a 4 grain.
1 oka=3 lb. 2 oz. 17 2-5 dwt. Troy.
1 drachma=1 dwt. 22⅓ grs.

MEASURE.

1 pik=26 4-5 in. Eng.
FOR CORN.—1 rebebe=36 gallons Eng.
1 kisloz=39 galls. Eng.

FRANCE.

(*Principal Commercial City*, PARIS.)

MONEY (at par.)

frs.	cts.		£	s.	d.		$	c.	m.
25	0	=	1	0	0	=	4	84	0
1	25	=	0	1	0	=	0	24	2
0	10	=	0	0	1	=	0	02	0 2-12
20	0 or gold Napoleon	=	0	16	0	=	3	87	2
5	0 or silver do.	=	0	4	0	=	0	96	8
1	0 do.	=	0	0	9½	=	0	19	1 7-12
0	10	=	0	0	1	=	0	02	0 2-12

1 franc weighs 5 grammes=100 centimes.

COIN.—Gold pieces of 100, 40, 20 and 10 francs.
Silver pieces of 5, 2, 1, ½ and ¼ francs.

Bank notes of 500 and 1000 francs.
Exchange on London, fr., 25.50 for £1 sterlg.
Exchange on New York, fr. 5.25 to 5.30 for $1.

WEIGHTS.

Milligramme	=	0.0154 grs.
Centigramme	=	0.1543
Decigramme	=	1.5434
Gramme	=	15.4340
Decagramme	=	154.3420
or 5.64 grams avoirdupois.		
Hectogramme	=	32.154 oz. troy,
or 3-527 oz. avoirdupois.		
Kilogramme	=	2 lbs. 8 oz. 3 dwt. 2 grs. troy.
or, 2 lbs. 3 oz. 4.652 drams avoirdupois.		
Myriogramme	=	26,795 lbs. troy,
or 22.0485 lbs. avoirdupois.		

Quintal=1 cwt. 3 qrs. 25 lbs. nearly.
Millier or bar=9 tons 16 cwt. 3 qrs. 12 lbs.
The weight of 1 cubic centimetre of pure water is taken as the foundation. It is called gramme.
1 myriagramme=10 kilogr.=100 hectogr. = 1000 decagr.=10,000 grammes.
1 gramme=10 decigr.=100 centigr.=1000 milligr.
1 gramme=15 2-5 grains troy.
Or the kilogr.=15434 grains troy.
373 1-4 grammes=1 lb. troy.
453 3-5 grammes=1 lb. avdp.
1 kilogr.=2 lb. 3 1-4 ounces avdp.
1 quintal=100 kilogr.=220½ lb. avdp.

MEASURES.

Long Measure.

FRENCH.		ENGLISH.
Millimetre	=	0.03937 in.
Centimetre	=	0.39371
Decimetre	=	3.93710
*Metre**	=	39.37100
Decametre	=	32.80916
Hectometre	=	328.09167
Kilometre	=	1093.63890
Myriometre	=	10936.38900
or 6 miles, 1 furlong, 28 poles.		

1 myriametre=10 kilometers=100 hectometers=1000 Decam=10,000 Metres.
1 metre=10 decimetres=100 centimetres=1000 millimetres.
The metre is the 10,000,000th part of the northern meridian quadrant.
1 metre=39 7-25 in. Eng.
1 lieue=1 myriametre=6 ⅞ Eng. mile.
1 aune=1 1-5=47 1-6 in. Eng.

Measure of Capacity.

Millitre	=	0.06103 cub. in
Centilitre	=	0.61028
Decilitre	=	6.10280
Litre†	=	61.02803
or 2.1135 wine pints.		
Decalitre	=	610.28028 cub. in.
or 2.642 wine gallons.		
Hectolitre	=	3.5317 cub. ft.
or 26.419 wine gallons, 22 imperial gallons, or 2.839 Winchester bushels.		
Kilolitre	=	35.3171 cub. ft.
or 1 tun and 12 wine gallons.		
Myriolite	=	353.17146 cub. ft.

FOR WINE, &c.—1 litre=1 cubic decimetre.
1 myrialitre=10 kilol.=100 hectol.=1000 decal.=10,000 litres.
1 litre=10 decil.=100 centil.=1000 millit.
1 litre=1¾ pints Eng.
1 hectolitre=22 gallons Eng.

Superficial Measure.

Centiare	=	1.1960 sq. yds.
Are (a sq. decametre)	=	119.6046
Decare	=	1196.0460
Hectare	=	11960.4604
or 2 acres, 1 rood, 35 perches.		

Solid Measure.

Decistere	=	3 5317 cub. ft.
Stere a (a cubic metre)	=	35.3174
Decastere	=	353 1741

* *Metre* is the fundamental unit of weights and measures; it is the ten-millionth part of the one-fourth of the terrestrial meridian.
† A cubic decimetre.

FRANKFORT ON THE MAIN

AND THE SOUTHERN PARTS OF GERMANY.

MONEY.

1 gulden a 60 kreuzers a 4 pfennings.
1 gulden=$0.40=3 kreutzers=0.02.
COIN.—Ducats a 2.20.
Pieces of 3½ gulden=1.40; 1 guld.=$0.40, and half gulden=$0.20.
Old pieces of 2 2-5 gulden=$0.96; ½=$0.48.
Exchange on London, 120 fl., m or l., for £10 stg.
" Paris, fr. 2.10 a 2.15 per fl.

MONEY (at par).

fl.	kr.		£	s.	d.		$	c.	m.
12	0	=	1	0	0	=	4	84	0
0	86	=	0	1	0	=	0	24	2
9	48 or g. Louis-d'or	=	0	16	1	=	3	89	2 2-12
5	35 or gold ducat	=	0	9	3	=	2	23	8 6-12
2	42 or silver crown	=	0	4	4	=	1	04	0 8-12
1	0	=	0	1	8	=	0	40	3 4-12

1 florin is equal to 60 kreutzers.

WEIGHT.

1 cwt.=100 great or heavy pds.=108 small or light pds.
1 lb. heavy=17⅝ oz. avdp.
1 lb. light=2 mark=32 loth=128 quent=512 pfennig=15 1-20 oz. troy.
1 mark=7oz. 10½ dwts. troy.
1 cwt. of 100 heavy or 108 light lbs.=111 lbs. avdp.
Gold and silver are sold by the mark.
1 carat of jewels=1 dwt. 7 5-7 grains troy.

MEASURE.

1 foot=11¼ in. Engl.
1 foot=12 zoll=144 lines.
1 ell=21 5-9 in. Eng.
1 Francfort Brabant ell=27 2-3 inches Eng.
FOR CORN.—1 malter a 4 simmer a 4 sechter a 4 gescheide.
1 malter=3 bush. 1¼ gall. Eng.
1 simmer=6 5-16 galls. Eng.
FOR LIQUORS.—1 ohm a 80 maas a 4 schoppen.
1 maas=1 gescheid=30 5-32 pints, Eng.
1 ohm=31 5-16 galls.
1 fuder=6 ohms; 1 stuck=8 ohm.

GERMANY.

There can be properly no classification under this general head. See Frankfort on the Main, which is the principal commercial town of Germany.

GREECE.

(*Principal Commercial Cities*, ATHENS, NAUPLIA, *etc.*)

MONEY.

drach.	lept.		£	s.	d.		$	c.	m.
28	15	=	1	0	0	=	4	84	0
1	30	=	0	1	0	=	0	24	2
0	11	=	0	0	1	=	0	02	0 2-12
40	0 or gold piece	=	1	10	6	=	7	38	1
5	0 or silv. piece	=	0	3	9	=	0	90	7 6-12
1	0	=	0	0	8¾	=	0	17	6 11-24

1 drachme is equal to 100 leptas.

HAMBURG & LUBECK.

(*Commercial Cities of* GERMANY.)

MONEY.

mk.	c.	schil.	pfen.		£	s.	d.		$	c.	m.
16		8	0	=	1	0	0	=	4	84	0
0		13¼	0	=	0	1	0	=	0	24	2
0		1	3	=	0	0	1	=	0	02	0 2-12
8		0	0 or 1 ducat.	=	0	9	3	=	2	23	8 6-12
3		0	0 or 1 dol.cur.	=	0	4	4	=	1	04	8 8-12
1		0	0	=	0	1	2½	=	0	29	2 6-12
0		1	0	=	0	0	0¾	=	0	01	5 3-24

1 mark currant is equal to 16 schillings.
1 thaler=3 marks=48 schillings; but they have two different values.
1st—according to the coin, called current;
2d—Imagined, used in trade, and called banco, generally 25 per cent. better than current.
1 mark currency=$0.26.
Exchange on London, 14 marks banco, m. or l., for £1 sterling.
" on Paris, fr. 1.50 to fr. 1.70 per mark banco.

WEIGHT.

1 pound=16¼ oz. avoirdupois Eng.
1 pound=32 loth a 4 quent.
1 centner=111 lbs.=119½ lbs. Eng.
1 ship pound=2½ cwts.=20 lies pound.
1 lies pound for shipping=14 lb.
1 " " land carriage=16 lbs.
1 stone flax, " " =20 "
1 " wood, etc. " " =10 "
For jewels the weight is the same as Berlin.

MEASURE.

Hamburg.	English.
1 foot	= 11.289 in.
100 commercial lbs.	= 106.838 lbs.
100 feet	= 94.021 feet.
100 ells	= 62.681 yds.
100 viertels	=159.39 imperial gallons.
100 fass	=18.135 imperial qurs.
1 last	=11 imperial qrs.
1 ship last	=3 tons

1 foot=12 zoll=96 achtelzoll.
1 Rhineland foot in Hambro'=12⅓ inches Eng.
1 Hambro' ell=22⅝ inches Eng.
1 Brabant ell in Hambro'=27 inches Eng.
1 Hambro' mile=4 3-5 English miles.

GRAIN.

Corn—Is sold by the last a 3 wispel a 10 scheffel a 2 wispel a 10 scheffel a 2 fass.
Barley—Is sold by the stock a 3 wispel a 10 scheffel a 3 fass.
1 fass=1 bushel 3 galls. 4¼ pints Eng.
1 scheffel=2 bush. 7 galls. 1 pint.
1 wispel=29 bush.
1 last=10 quarters 7½ bush.

HOLLAND.

A part of the Netherlands.

(*Principal Commercial Cities*, Amsterdam, Haarlem, the Hague, Rotterdam, Leyden, etc.)

MONEY (at par.)

guilder.cts.	£ s. d.	$ c. m.
12 0	= 1 0 0	= 4 84 0
0 60	= 0 1 0	= 0 24 2
0 5	= 0 0 1	= 0 02 0 2-12
10 0 g. 10 fl. piece	= 0 16 6	= 3 99 3
5 55 or ducat	= 0 9 3	= 2 23 8 6-12
1 0 or silv. florin	= 0 1 8	= 0 40 3 4-12

1 guilder is equal to 100 cents.

WEIGHTS AND MEASURES.

Dutch.	English.
1 foot	= 11 1-7 in.
1 ell	= 27 1-12 in.
1 last for corn	= 10 qrs. 5 1-4 bush. Winchester measure.
1 aam	= 41 wine gallons.
1 hoed	= 5 chaldr. Newcastle.
1 last for freight	= 4000 lbs.
1 last for ballast	= 2000 lbs.

LOMBARDY.

(*Principal Commercial Cities*, Venice *and* Milan.)

MONEY.

1 lira Austriaca=100 centesimi or 20 soldi a 5 centesimi.
1 lira Austriace=$0.16.
The Austrian is the current coin under other names.

2 gulden=1 scudo nuovo =$0.96.
1 gulden=½ scudo nuovo =$0.48.
½ gulden=¼ scudo nuovo =$0.24.
¼ gulden=1 lira Austriaca =$0.16.
Exchange on London, 30 lira Austriache m. or l. for £1 sterlg.
Exchange on Paris, fr. 85.00 m. or l. per l. Aust. 100.

WEIGHT.

1 libbra=1 kilogramme=2 lb. 3 1-4 oz. avdp.
1 libbra=10 oncie=100 grossi=1000 denari.
1 quintale=100 libbre.
1 rubbo=10 libbre.

MEASURE.

Equal to the French.

1 metro=10 palmi=100 diti=1000 adomi.
1 miglia=1000 metri.

Corn—1 soma=1 hectolitre, French.
1 soma=10 mine=100 pinta=1000 coppi.

MEXICO & MONTE VIDEO.

Mexico, *Capital of Republic of Mexico.*
Monte Video, *Capital of Republic of Uraguay, or Banda Oriental, S. A.*

MEXICO. MONEY.

dols.	reals.	£ s. d.	$ c. m.
16	0 or gold doubloon	= 3 5 0	=15 73 0
8	0 or ½ do	= 1 12 6	= 7 86 5
4	0 or 1-4 do	= 0 16 3	= 3 93 2 6-12
1	0 or 1-16 do	= 0 4 0	= 0 96 8
1	0 silv. dol., 8 reals	= 0 4 2	= 1 00 8 4-12
0	4 do. ½ dol.	= 0 2 1	= 0 50 4 2-12
0	2 do. 1-4 dol.	= 0 1 0½	= 0 25 2 1-12
0	1 do. 1-8 dol.	= 0 0 6½	= 0 12 6 1-24

1 dollar is equal to 8 reals.
1 peso a 8 reales de planta a 4 cuartos.
1 peso=1 dollar U. S. currency.
The piastre or duros of 1833 and 1834 are about 6 per cent. less value.
Coin—Gold doblones, a 16 duros.
1-2, 1-4 and 1-8 do.
Silver duros or dollars.
Reales and 1-2 reales.

MONTE VIDEO. MONEY.

The peso or duro a 8 reales de plata a 100 centesimos.
This peso is not equal with the Spanish or Mexican, and is generally called the peso corriente.
1 peso corriente=$0.80, or 5 pesos corrientes=4 pesos duro—Spanish silver dollar.
Exchange on London=52 d. sterling for 1 peso duro.

MEASURE AND WEIGHT.

108 varas—100 yards English.
For the rest, see Spain.

NAPLES.

(*Principal Commercial City* Naples *the Capital*)

MONEY.

ducat.	grani.	£ s. d.	$ c. m.
6	3	=1 0 0	= 4 84 0
0	30	=0 1 0	= 0 24 2
0	2½	=0 0 1	= 0 02 0 2-12
30	0 piece of	=5 0 0	=24 20 0
1	0 silver ducat	=0 3 4	= 0 80 6 8-12
0	120 or dollar	=0 4 0	= 0 96 8
0	20 piece of	=0 0 8	= 0 16 1 4-12
9	10 piece of	=0 0 4	= 0 08 0 8-12

1 ducat is equal to 100 grani.
Ducati di regno a 10 carlini a 10 grani.
1 ducato $0.90.
Coin—Gold pieces of 6, 4 and 2 ducati, and pieces of 3 ducati or 1 oncia, and pieces of 2, 5 and 10 oncie.
Silver pieces of 12, 10, 6, etc., carlini.
Scudi of 12 carlini and ducati in silver of 10 carlini.
Exchange on London, 575 grani per £1 sterlg.
Exchange on Paris, 22 a 25 grani per 1 fr.

WEIGHT.

1 cantaro=100 rottoli a 33 1-3 oncie.
1 rotolo=1 lb. 15 3-7 oz. avdp.
The libbra for gold, silver, etc., has 12 oz.
360 trappesie, 7200 acini.
1 libbra=10 oz. 1 1-4 dwts. troy.

MEASURE.

1 palmo=12 oncie=60 minuti=120 punti.
1 palmo=10 10-27 in. Eng.
1 canna=8 palmi=2 1-3 yards Eng.

CORN—1 carro a 36 tomoli a 24 mass or 1 tomolo a 2 mezzetti a 4 quarti a 8 stoppeli=12 galls. 1⅓ pints English.

WINE—1 carro=2 batti=24 barrili=1440 caraffi, in the country 1584 caraffi.

1 barile=9 1-8 gallons, 1 caraffo=1 5-22 pints.
Oil is sold by the [illegible]na a 16 staji a 256 quarti or 1536 misurelle, and weighs about 350 lbs Eng.
The salma of Bari is about 312 and of Gallipoli only 295 lbs. Eng.

1 quarto in measure=5-6 pint.
1 staja in measure=27 galls.

THE NETHERLANDS.

(*Principal Commercial City*, AMSTERDAM.)

MONEY.

1 gulden=100 cents=1s. 8d. English=$0.40.3 4-12
5 cents=1 stuiver=1d. English=$0.02.0 2-12.
2½ guilders=$1.
COIN.—Gold pieces of 10 and 5 gulden. Silver pieces of 3 and 1 gulden, 50, 25, 10 and 5 cents.

Old Gold Coin.—Ducats weighing 52 4-5 grains English, double ducats, ryders=14 gulden.

Butter is sold by the ton, which differs from the common ton=336 pounds Holl. 1 pound=1 5-12 avoirdupois. 1 ship-pound=300 pounds.

Exchange on London, 11 g. 80 cents, more or less, for £1 sterling.

Exchange on Paris, 2 fr. 10 cts., more or less, per gulden.

WEIGHT.

lb.		lood.		wigtj.		korrels.
1	=	10	=	100	=	1000
		1	=	10	=	100
				1	=	10

1 lb.=1 lb. 1 5 8 oz. Avdp.

MEASURE.

The Ell=1 French metre=39 3-8 inches Eng.

roede.		ell.		palm.		duim.		streep.
1	=	10	=	100	=	1000	=	10,000
		1	=	10	=	100	=	1,000
				1	=	10	=	100
						1	=	10

1 myl (mile)=1000 ells=⅝ mile English.
FOR CORN.—1 mudde=2 bushels 6¼ gallons.
1 mud=10 schepel=100 kop=1000 maajtes.
1 last=30 mudden.

FOR LIQUORS.—1 vat=22 1-10 gallons English.
1 vat=100 kann=1,000 maatj.=10,000 vingerh.

NORWAY.

(*Principal Commercial City*, CHRISTIANA.)

MONEY.

sp. dol.	skil.	£	s.	d.	$	c.	m.
4	75	=1	0	0	=4	84	0
0	28	=0	1	0	=0	24	2
0	2¼	=0	0	1	=0	02	0 2-12
0	24 or 1 mark	=0	0	9½	=0	19	1 7-12
1	0 specie dollar	=0	4	4	=0	01	8 8-12
0	60 or 1 rigsb. dol.	=0	2	2	=0	52	4 4-12
0	1 nearly	=0	0	0½	=0	01	0 1-12

1 specie dollar is equal to 120 skillings.

POLAND.

Principal Commercial City, WARSAW.

MONEY.

fl.	grosch.	£	s.	d.	$	c.	m.
42	0	=1	0	0	=4	84	0
2	3	=0	1	0	=0	24	2
0	5	=0	0	1	=0	02	0 2-12
18	15 or 1 gold ducat	=0	9	3	=2	23	8 6-12
8	0 or 1 rix dollar	=0	4	0	=0	96	8
1	6 or 1 silver florin	=0	0	5¾	=0	11	5 23-24

1 florin is equal to 30 groschen.
Formerly the gulden a 30 graschm Polish.
1 gulden=$0.11½ cents.
At present the Russian coin is the only legal tender.

Bank notes of the Polish National Bank of 5.50 and 100 guilders.

Exchange on London, 32 Polish gulden m. or l. for £1 sterling.

Exchange on Paris, fr. 60.50 a fr. 60.75 per 100 gulden.

WEIGHT.

1 funt (lb.) 14 7-16 ounces avdp.
1 funt (lb.) 13⅛ ounces troy.
1 lb.=16 ounces=32 loth=128 drams a 3 scruples a 24 grains.
1 centner=3 stones=100 lbs.=87 7-8 lbs. avdp.
Wool is sold by the stone of 32 lbs.

MEASURE.

1 foot (stopa)=11½ inches Eng.
1 ell (lokiee)=25 inches Eng.
1 mile=8 wersts=5 miles Eng.
CORN—1 kwart=2 litre=1¾ pint Eng.
1 korzek=128 kwarts=28 galls. Eng.

PORTUGAL.

(*Principal Commercial City*, LISBON.)

MONEY.

reis.	£	s.	d.	$	c.	m.
4120	=1	0	0	=4	84	0
206	=0	1	0	=0	24	2
20 or 1 vintem	=0	0	1⅛	=0	02	2 33-48
6400 or gold Joannose	=1	16	0	=8	71	2
1000 silv. crwn. or mil reis	=0	4	8	=1	12	9 4-12
400 or crusado	=0	2	3	=0	53	4 6-12

1 mil reis is equal to 1000 reis.

Accounts are kept in reis.
1 milrei (or 1000 reis)=2 1-12 new=2½ old cruzados=10 testons=25 reales; 1 rei=6 ceitis.
1 conto de reis (1 million reis)=£270 sterling=$1296 (the dollar at the rate of 50 pence Eng.)
1 milree=$1.25.
1 crusado velho=about $0.50.
1 crusado novo=about $0.60.

COIN—Gold pieces of 24 and 12 thousand reis=$16.80 and $33.60.
Silver pieces 1, ½, ¼, ⅛ cruzado.
Exchange on London, 1 milrei for 59 pence.
" on Paris, fr. 6.20 a fr. 6.30 per milrei.

WEIGHT.

1 quintal a 4 arrobes a 32 libras a 2 marcas.
1 libra=1 lb. avdp. Eng.
GOLD AND SILVER—1 marco=8 oncas=64 outavas=4608 grainos.
1 marca=½ lb =8 8-20 ounces troy.
151 carats of jewels=1 ounce English troy.

MEASURE.

The pe=12 ¾ inches Eng.
The vara=43 4-5 inches Eng.
The covado=26 7-10 inches Eng.
The passo geometrico=1½ vara.
1 mile=4 miles Eng.
CORN is sold by the mayo a 15 fanegas a 4 alqueiras a 4 quartos a 8 selamis.
1 moyo=23 bushels Eng.
1 fanega=11⅞ gallons Eng.

WINE AND OIL.—1 tonelada a 2 pipas or botas =52 almudas=104 alquires or potes & 624 canadas.
1 almude of Lisbon=3 galls. 5 pints Eng.
1 " Oporto=5 galls. 5 pints Eng.
1 canada=13 1-16 pints Eng.

PRUSSIA.

(*Principal Commercial City*, BERLIN.)

MONEY.

thal.	sg.	pf.		£	s.	d.		$	c.	m.
6	20	0		=1	0	0	=4	84	0	
0	9	9		=0	1	0	=0	24	2	
0	0	10		=0	0	1	=0	02	0	2-12
5	20	0	gold Frederick	=0	16	9	=4	05	3	6-12
1	0	0	silver thaler	=0	3	1	=0	74	6	2-12
0	1	0	silver groschen	=0	0	1¼	=0	02	5	5-24

1 thaler=30 silver groschen a 12 pfenning.

COINS—Friedrichs d'or=16s. 6d. English=$3.96 Double do. 33s.=$7.92. Half do. 8s. 3d.=1.98. In silver pieces of 2, 1, ½, ¼, 1-6, 1-12 thaler. Do. of 2, 1, ½ groschen.

Bank notes of 1, 5, 50, 100, 500 thaler freely taken in the whole of Germany for their nominal value.

Wool is sold by the stein of 22 pounds—22⅔ pounds avoirdupois.

Exchange on London, 6 thalers 25 gr., more or less for £1 sterling. Do. Paris, fr. 3.75, more or less, per thaler.

WEIGHT.

1 pound=467 7-10 grammes French=1 1-32 pound avoirdupois.
1 cwt.=110 pounds Pr.=113 7-16 lbs. avoirdupois.
1 last (shipping) is 4000 pounds.

Gold and silver are sold by the mark=½ pound =7 oz. 10⅓ dwts. troy English.

The mark is=288 grains.

For assay of silver the mark is divided into 16 loth a 18 grs. ; and of gold into 24 carats a 12 grs.
1 carat of jewels is=9-160 quent=1 dwt. 7 5-7 grains troy.

MEASURE.

The foot=12⅓ inches English.
1 ruthe=12 feet=144 zoll=1728 linien.
1 ell=2⅓ zoll=26⅓ inches English.
1 faden=6 feet. 1 mile=4 2-5 miles Eng.
FOR CORN.=1 scheffel=1 ½ bushel.
1 scheffel=16 metz; 24 scheffel=1 wispel.

ROME.

(*Capital of the* PAPAL STATES.)

MONEY.

paoli.	baj.		£	s.	d		$	c.	m.
46	0		=1	0	0	=4	84	0	
2	5		=0	1	0	=0	24	2	
0	2		=0	0	1	=0	02	0	2-12
100	0	gld. 10 scudi piece	=2	2	6	=10	28	5	
10	0	silver scudo	=0	4	2	=1	00	8	4-12
1	0		=0	0	5	=0	10	0	10-12

1 paoli is equal to 10 bajochi.

RUSSIA.

(*Principal Commercial City*, ST. PETERSBURG.)

MONEY.

roubl.	kop.		£	s.	d.		$	c.	m.
6	33		=1	0	0	=4	84	0	
0	32		=0	1	0	=0	24	2	
0	2⅔		=0	0	1	=0	02	2	2-12
5	15	gold half imper.	=0	16	3	=3	93	2	6-13
3	0	ducat	=0	9	2	=2	21	8	4-12
1	0	silver rouble	=0	3	2	=0	76	6	4-12

1 rouble is equal to 100 kopeks.

COIN—Gold imperials of 10 and 5 roubles (silver). Silver, rouble, and pieces of 75, 50, 40, 30, &c., to 5 kopeks silver.

Bank notes from 1 to 1000 roubles silver.

Exchange on London, from 39d. to 42d. for 1 rouble silver.

Exchange on Paris, from fr. 4.10 to fr. 4.20 per rouble silver.

WEIGHT AND MEASURE.

RUSSIAN.	ENGLISH.
1 arsheen*	= 28 in.
1 sashen†	= 7 ft.
100 feet	= 114⅓ feet.
1 werst	= 5 fur. 12 poles.
1 lb.	= 6318.5 grs.
100 lbs.	= 90.26 lbs. avdp.
1 pood	= 36 lbs. 1 oz. 11 drs.
1 chetwert	= 5.952 Winc. bush.
100 do.	= 74.4 quarters.
1 wedro	= 3¼ wine gallons.

More particularly

WEIGHT.

1 pound (funt)=14½ oz. avdp.
1 pood=40 lb.=36¼ lbs. avdp.
1 bercowitz=10 poods=362½ lbs. avdp.
1 bruttolast=6 chetwerts.
(The funt is=95 solotnick. 1 sol.=96 doll.)

MEASURE.

1 foot = 1 foot Eng.
1 arsheen = 28 in. Eng.
1 sashen = 3 arsheens.
1 sashen=3 arsheens=7 feet=48 werschecks=84 inches=1008 lines.
1 werst=500 sashen=⅝ mile Eng.

CORN, &c.—1 chetwert=4 pajok.
8 tschetwerick=32 tschewerks=64 garner.
1 chetwert=5 bushels 6 gallons 2 pints Eng.
1 tschetwerick=5 7-9 gallons Eng.
1 kuhl or sark=10 tschetwericki.
1 wedro=2¾ galls. Eng.
1 fass=40 wedroja.

SARDINIA.

(*Principal Commercial Cities*, GENOA *and* TURIN.)

MONEY.

The lira nuova=1 franc a 100 centesimi=9¼d. English=$0.18½.

COIN—Gold: Pieces a 20, 40, 80 and 100 lire nuove or $3.75, $7 50, $15, and $18.75. Silver: scudi d'argento a 5 lire nuove. Pieces of 2 and 1 lire and 50 and 25 centesimi.

Bank notes of 5, 10 and 20 scudi.

Exchange on London, 25 50 lire, more or less, for £1 sterling.

Exchange on Paris, 21 lire per fr. 20.

WEIGHT.

IN GENOA. 1 peso grosso=12 1-6 oz. avdp.
1 peso sottile=1 lb. 18 grains troy.
IN TURIN. 1 libbra=13 oz. avdp.
The Customs use the French kilogramme.
Gold and silver weight is the marco=8 uncie a 24 denari a 24 grani.
1 marco=8 oz. troy.

MEASURE.

IN GENOA. 1 palmo=9 ¾ inches Eng.
FOR CORN—1 mina=3 bush. 2½ galls Eng.
1 mina=8 quarti=96 gombette.
FOR WINE—1 barile=16½ galls. Eng.
1 mezzarola=2 barili=100 pinte.
FOR OIL—1 barile=14 ¼ galls. Eng.
IN TURIN. 1 piede liprando=1 ft. 8½ in. Eng.
1 piede manelle=12¾ in. Eng.
1 raso (ell)=23½ in. Eng.
FOR CORN—1 sacco=5 emine a 8 copi a 24 cucchiari.
1 sacco=25½ galls. Eng.
FOR WINE—1 brenta=10 4-5 galls.
1 carro=10 brenta a 36 pinte a 2 boccali.

* 1 arsheen=28 inches Eng.
† 1 sashen=3 arsheens.

SAXONY.

(*Principal Commercial Cities* DRESDEN *and* LEIPSIC.)

MONEY.

rd.gn.pf.	£ s. d.	$ c. m.
6 15 0	= 1 0 0	= 4 84 0
0 9 9	= 0 1 0	= 0 24 2
0 0 10	= 0 0 1	= 0 02 0 2-12
5 12½0 or August d'or	= 0 16 2	= 3 91 2 4-12
1 10 0 or specie thaler	= 0 3 11	= 0 94 7 10-12
1 0 0 currency	= 0 4 1	= 0 74 6 2-12
0 1 0	= 0 0 1¼	= 0 02 5 5-24

1 thaler a 30 groschen a 10 pfenninge.
1 thaler=2s. 11d. Eng.=$0.70.5 10-12

COIN—August d'or=16s. Eng=$3.87.2.
Silver pieces of 2, 1, ½, 1-6 and 1-12 thaler.

Paper money is issued by the Government in notes of 10, 5 and 1 thaler.

By the Bank of Leipsic, in notes of 20, 100, 200, 500 and 1000 thalers.

Also 1 thaler notes by the Leipsic Dresden Railway Company.

Exchange on London, 6 thaler 25 groschen, more or less, per £1.

Exchange on Paris, fr. 3.75 per thaler.

WEIGHT.

1 lb.=1 lb. 1⅝ oz avdp. Eng.
1 cwt.=100 lbs.=1000 millas.

For the retail trade the lb. is divided into 32 loths, a 4 quents.

MEASURE.

1 foot=11⅜ inches Eng.
1 ell=3-5 French metre=24 in. Eng.

FOR CORN—1 schaffel=100 litres French=22 galls. nearly.

12 schaffels=1 malter; 2 malters=1 wispel.
1 wispel=66 bushels Eng.

FOR LIQUIDS—1 oxhooft=1½ ohm=3 eimer=210 kanns.

1 fuder=4 oxhoofts.
1 kanne=1 litre=1¾ pints Eng.

SMYRNA AND THE LEVANT

MONEY.

Like Constantinople. In the Levant are likewise used to a great extent, Spanish dollars and Dutch, Hungarian and Venetian ducats. Likewise German Conventions thaler—$0 96 to $1, being subject to variation.

Exchange on London, 105 piasters, more or less, for £1.

Exchange on Paris, fr. 4 75 to fr. 5 per piaster.

WEIGHT.

1 cantarro=7½ battman=22½ chequis=45 okes=100 rotoli a 180 drachms.

The oka, as a gold and silver weight, has 400 drachms, and is equal to 3¼ lbs. Troy.

1 cantaro = 127 1-2 lbs. Troy.
1 rotolo = 1 lb. 4⅓ oz.

Goat's hair is sold by the chequi a 800 drachmas
Silk is sold by the teffei a 610 drachmas.
Opium is sold by the teffei a 250 drachmas.
1 drachm=49 3-5 grains Troy weight.

MEASURE.

1 pik = 27 in. Eng.

CORN—The killow=11⅝ galls.

SPAIN.

(*Principal Commercial City*, MADRID.)

MONEY.

dols.rls.	£ s. d.	$ c. m.
4 14 barley	= 1 0 0	= 4 84 0
0 5	= 0 1 0	= 0 24 2
16 0 or gold doubloon	= 3 6 0	= 15 97 2
4 0 or gold pistole	= 0 16 6	= 3 99 3
1 0 or silver dollar	= 0 4 3	= 1 02 S 6-12
0 1 or real vellon	= 0 0 2⅝	= 0 05 3 45-48

1 dollar is equal to 20 reals.

They use eight different sorts of money:—

1. Castilian.
2. Mexican.
3. Catalonian.
4. Majorcan.
5. Valencian.
6. Arragon.
7. Navarre.
8. The Canarian money.

The Castilian is the chief, and is 1 real de plate antigua=1 15-17 real de velon=16 cuartos=34 maravedis de plata antigua=64 marav. de vellon =640 Castil. dineros.

10⅝ reales de plata antigua=1 piaster.
1 piaster or duro=4s. 4d. Eng.=$1.04 8 8-12.
1 real de plata=5d. Eng.=$0.10.0 10-12.

COIN—Gold, 1 quadrupel pistole=8 escudos=$16 to $15.60=doblon or onza d'Oro=$16 subdivided into ½, ¼, ⅛ and 1-16. Peso duro or dollar need not be described.

Exchange on London, 40d. sterling, more or less, per peso de plata antigua=48d. to 52d. English, per dollar.

Exchange on Paris, fr. 5.10 a fr. 5.30 per peso duro.

WEIGHTS AND MEASURES.

SPANISH.		ENGLISH.
1 cana	=	21 inch. nearly.
100 "	=	58.514 yards.
100 quarteras	=	23.536 Win. qrs.
100 lbs.	=	88.215 lbs. avdp.

More particularly—

WEIGHT.

1 Castilian marca=8 1-7 oz. avdp. or 7 oz. 3 4-25 dwts. troy, Eng.

1 marca=8 onzas=64 ochaves=4608 granos.
1 quintal macho=6 arrobas=150 libras.
300 marcas=152½ lbs. avdp.
1 quintal=4 arrobas=100 libras=101¾ lbs. avdp.

Jewels and pearls are weighed by the Castilian ounce a 140 quilates, a 4 granos.

1 oz.=431½ grains troy.

MEASURE.

1 pie=11⅛ inches Eng.
4 estado=2 varas=6 pies=5 ft. 6¾ in. Eng.
1 league=4¼ miles Eng.

FOR CORN—1 cahir=12 fanegas a 12 celemines or almudos a 4 quartillos.

1 fanega=12⅔ galls. Eng.

FOR LIQUIDS—1 cantaro or arroba mayor=8 azumbres=32 quartillos.

1 arroba mayor=3 galls. 3¾ pints Eng.
1 arroba menor for oil=2 galls. 5½ pints Eng.
1 moyo=16 cantaros. 1 pipa=27 cantaros.
1 bota=30 cantaros.

SWEDEN.

(*Principal Commercial City*, STOCKHOLM.)

MONEY.

rd.	skil.		£	s.	d.	$	c.	m.
12	0	in banco	= 1	0	0	=4	84	0
0	23		= 0	1	0	=0	24	2
0	2⅔		= 0	0	1	=0	02	0 2-12
5	25	or 1 gold ducat	= 0	9	2	=2	21	8 4-12
2	25	or 1 specie silver	= 0	4	4	=1	04	8 8-12
1	0	banco	= 0	1	8	=0	40	3 4-12
1	12½	or half specie silver	= 0	2	2	=0	52	4 4-12

1 rd banco is equal to 48 skillings.
1 silver specie is equal to 96 skillings.
1 riksdaler specie a 48 skillings=$1.05.

Payments are, however, made chiefly in bank notes of 8, 10, 12, 14 and 16 skillings, and 2, 3, 5, 6, 9, up to 50 riksdaler.

Banco=1 riksdaler specie.

Exchange on London, 12 dalers banco for £1 sterg.
Exchange on Paris, fr. 2.10 to fr. 2.15 for 1 riksdal.

WEIGHT.

1 skal pound	=	15 oz. avdp.
1 schip pound	=	400 skal lbs.
1 cwt	=	120 lbs.
1 scale of spelter	=	165 "
1 stone wool	=	32 "
1 mark (for gold)	=	6 oz. 16 dwt. troy.

MEASURE.

1 foot=1 foot Eng.
1 faam=3 alnar=6 feet=17 verthum.
1 alnar=2 ft. Eng.

CORN.—1 tonn=4 bush. Eng.
1 tonn=8 quarts=32 kappar=56 kans=448 quartiera.

WINE.—2 pipes=1 fuder=4 oxhoofte=12 eimer =720 stop.

SWITZERLAND.

(*Principal Commercial Cities*, GENEVA, BERN, BASLE.)

MONEY. Old System.

fr.	batz.	rap.	£	s.	d.	$	c.	m.
17	7	5	= 1	0	0	=4	84	0
0	8	7	= 0	1	0	=0	24	2
0	0	7	= 0	0	1	=0	02	0 2-12
4	0	0 piece of	= 0	4	8	=1	12	9 4-12
1	0	0 or 10 batz	= 0	1	1½	=0	27	2 3-12
0	1	0	= 0	0	1½	=0	02	6 32-36

A franc is equal to 10 batzen.

New System—as in France.

1 franc=10 batzen a 10 rappen or 1 livre a 20 sols a 12 derniers.
1 franc=1 livre=$0.27.

COIN.—Gold pistoles a 32 francs=$8 65.
" ½ pistoles a 16 francs=$4.32½.
" Ducats=$2.22.
Silver pieces of 40, 20, 10 and 5 batzen.

N. B.—Each Canton has besides these its own currency.

Exchange of Basle on London, 17 francs 5 rappes, more or less, for £1 sterling.
Exchange on Paris, fr. 1.50 per fr. 1, or 50 per cent. premium, more or less, in favor of Basle.

WEIGHT.

1 cwt.=100 lbs.=50 kilogrammes=110¼ lbs. avdp. Eng.
1 lb.=½ kilogramme=1 lb. 1⅝ oz. avdp. Eng.

MEASURE.

The basis is the Helvetian foot.
1 foot=3-10 French metre=11 17-20 in. Eng.
2 feet=1 ell; 4 feet=1 stab or staff.
16,000 feet=1 hour (mile) =3 Eng. miles.

FOR CORN.—1 malter=10 viertel=100 imir.
1 malter=4 bush. 1 gall. Eng.
1 immir=3½ pints.

FOR WINE.—1 ohm=100 mass (or measures).
1 ohm= 33 galls. Eng.
1 maas=3½ pints.

TURKEY.

(*Principal Commercial City*, CONSTANTINOPLE.)

MONEY.

pias.	par.		£	s.	d.	$	c.	m.
109	0		= 1	0	0	=4	84	0
5¾	0		= 0	1	0	=0	24	2
0	18		= 0	0	1	=0	02	0 2-12
200	0	gold new dbl. seq.	= 1	11	0	=7	50	2
100	0	" 1 seq.	= 0	18	0	=3	35	6
1	0		= 0	0	2¼	=0	04	5 9-24
22	0	or 1 Spanish dol'r	= 0	4	2	=1	00	8 4-12

Piaster a 40 paras a 3 aspers.
Also piaster (grush) a 100 aspers.
1 piaster=2½d. English=$0.05.
1 purse silver is 500 piasters.
1 purse gold is 30,000 piasters.
1 juk is 100,000 coined aspers.

The government or bank notes bear 8 per cent. interest.

Exchange on London, 104 piasters, more or less, for £1 sterling.

Exchange on Paris, from 400 to 410 piasters for 100 francs.

WEIGHT.

1 pound, chequi=11 oz. avoirdupois.
1 oka=2 lbs. 12 oz. avoirdupois.
1 oka=4 chequi=400 drachmas.
1 taffec=610 drachmas.
1 batman=6 okas.
1 cantaro=44 a 45 okas.

Gold and silver weight like Alexandria.
1 chequi opium=250 drachmas.
1 chequi goat-hair=800 drachmas.

PIECE GOODS.—1 mazzec=50 pieces.

MEASURE.

The large pik halebi, archim=27 9-10 inches Eng.
The small pik andassa=27 1-16 inches English.

FOR CORN.—The killows=7½ gallons English.
1 fortin=4 killows=30 gallons English.
1 killow of rice should weigh 10 okas.

FOR LIQUORS.—1 almud=1 2-5 gallon English.
1 almud of oil should weigh 22 5-8 pounds avoirdupois.

TUSCANY.

(*Principal Commercial Cities*, FLORENCE *and* LEGHORN.)

MONEY.

1 lira Toscana=100 centesimi=7 4-5d. Eng.= $0.15 3-5.
1 lira Toscana=20 soldi=240 denari.
25 lire Toscane=21 francs.

COIN.—			
Gold:	Rusponi a 3 zecchini	=	$6 25
	Zecchini gigliati	=	2 05
	Half "	=	1 03
Silver:	Francesconi a Leopoldini	=	0 96
	Half "	=	0 48
	Tallari	=	0 92
	Testoni	=	0 30
	Lire a 12 crazie, about		15

Exchange on London, 30 lire, m. or l., per £1.
Exchange on Paris, 80 to 85 centimes per lira.

WEIGHTS AND MEASURES.

LEGHORN.		ENGLISH.
1 braccio	=	22 98 inches.
155 bracci	=	100 yards.
1 sacco	=	2.0739 Winchester bush.
4 sacci	=	1 imperial quarter nearly.
100 lbs.	=	74 864 lbs. avoirdupois.
1 centinajo	=	100 lbs.
1 rottolo	=	3 lbs.

More particularly—

WEIGHT.

1 quintal 100 lbs.=1200 uncie a 24 denari.
1 lb =12 oz. avoirdupois.
1 quintal=74⅞ lbs. avoirdupois.
FOR GOLD.—1 lb.=10 11-12 oz. troy, and is divided into 24 carati a 8 ottavi.
FOR SILVER, into 12 uncie a 24 denari.
Jewels are weighed by the caret a 4 grani.

MEASURE.

1 braccio = 23 inches, English.
1 mile = 1 mile, 48 yards, English.
The braccio used by builders=21 3-5 inches, Eng.
FOR CORN.—1 sacco=3 staja=6 mines; 100 sacchi=201 bushels.
FOR WINE.—1 barile=20 fiaschi=80 mazzette=160 quartuzzi=10 1-30 galls. Eng.
1 barile of oil=7¾ galls. Eng.

SHIPPING MEASUREMENT.

FOR GRAIN.—42 cubic feet=1 ton shipping measurement.

1 bushel = 60 lbs.
1 bushel = 2218½ cubic inches.
8 bushels = 1 quarter.
1 quarter = 17745 cub. in. or 10.27 feet.

Therefore, 1 ton will take four quarters and one-tenth.

1 bushel being equal to 60 lbs ,
1 quarter will be equal to 480 lbs.,
1 ton=1968 lbs., or 17 cwt. 2 qrs. 0 lbs. fully.

One ship of 200 tons measurement can therefore carry 820 quarters, but it generally can carry much more.

Miscellaneous Table of Foreign Weights and Measures.

Arroba of Buenos Ayres,		= 25.36 lbs. U. S.
Amir, or Emir, of Stuttgard,		= 78 gallons.
Balsam Copaiva, 8 lbs.,		= 1 do.
Butt of Wine,		= 130 do.
Canado of Balsam Copaiva,		= 30 pounds.
Chaldron Coal, British Provinces,		= 36 bushels.
do. do. Cumberland,		= 53 do.
Cheki of Opium, from Smyrna		= 1⅝ pound.
Coal, railway wagon load, Pictou,		= 62 cwt.
Flax, head of, about		= 6¾ pounds.
Foot, 100 feet St. Domingo,		= 106 60-100 feet
Honey, 1 gallon,		= 12 pounds.
Linseed, one bushel,		= 47 do.
Mudd, or maud, of Rotterdam,		= 148 do.
Moye of Salt, Spain,		= 70 bushels.
Modius of Salt, from Ivica, Spain,		= 40 do.
do. do. Oporto and St. Ubes,		= 23 do.
Mass, of Antwerp, ¼ of ohm,		= 10 gallons.
Ohm do.		= 40 do.
Pounds of Austria,	100 lbs.	= 123 60-100.
do Antwerp,	do.	= 103 35-100.
do. Bavaria,	do.	= 123.
do. Belgium,	do.	= 103 35 100.
do. Brussels,	do.	= 103 35-100.
do. Bremen,	do.	= 109 80 100.
do. Berlin,	do.	= 103 11-100.
do. Hamburg,	do.	= 106 80-100.
do. Malaga,	do.	= 101 44-100.
do. Netherlands,	do.	= 108 93-100.
do. Portugal,	do.	= 101 19-100.
do. Prussia,	do.	= 103 11-100.
do. Rotterdam,	do.	= 108 93-100.
do. Spain,	do.	= 101 44-100.
do. St. Domingo,	do.	= 107 93-100.
do. Trieste,	do.	= 123 60-100.
do. Vienna,	do.	= 123 60-100.
Palm of Italy, of marble,	do.	= 6 inches.
Quintal of France,	do.	= 220 54-100 lbs.
Skippond of Gottenburg,	do.	= 300 pounds.
do. Gefle,		= 314 1-10 lbs.
Salt, 1 barrel		= 5½ bushels.
Vara, Spanish		= 8 feet.
Vara of Baracoa,		= 20 feet.

RATES OF FOREIGN MONEY OR CURRENCY, FIXED BY LAW.

The following condensed presentation of the United States value of Foreign Currencies, Weights and Measures, is, to a considerable extent, a repetition of what may be found in the foregoing Tables. It is here thus given, first for the greater convenience of this condensed form; and, secondly, as giving the specific values established by law in the United States, while that presented in the foregoing is the one recognized in London, estimated in Sterling Currency, and that reduced to Federal Currency, putting the pound at $4.84. The slight discrepancies between the two are thus accounted for, and the reader will bear in mind that the following are the popular values or rates at which these foreign coins pass in the United States.

The editor acknowledges his essential indebtedness for these to a volume entitled "United States Tariff," etc , published by Messrs. Rich & Loutrel, New York, to whose courtesy we are indebted for the use of these tables. In it may be found a great amount of valuable information to commercial men, respecting the rates of duties on foreign merchandise and other matters. The volume is compiled by E. D. Ogden, Esq., Entry Clerk in the New York Custom House, and is made the text-book in all the Custom Houses throughout the United States and by the Departments at Washington.

	$ cts.				
Ducat of Naples,	80	or	100 grani.		
Franc of France or Belgium,	18 6-10	"	100 centimes.		
Florin of the Netherlands,	40	"	100 do.		
Florin of the Southern States of Germany,	40	"	60 kreutzers	of	4 pfennings.
Florin of Austria and Trieste,	48½	"	60 do.	"	4 do.
Florin of Nuremburg and Frankfort,	40	"	60 do.	"	4 do.
Florin of Bohemia,	48½	"	60 do.	"	4 do.
Guilder of Netherlands, etc., same as Florins.					
Lira of the Lombardo and Venetian Kingdom,	16	"	100 centisimi	"	100 millesemi.
Livra of Leghorn,	16	"	20 soldi	"	12 denari.
Lira of Tuscany,	16	"	20 do.	"	12 do.
Lira of Sardinia,	18 6-10	"	4 reali	"	20 soldi.
Livre of Genoa,	18 6-10	"	20 soldi	"	12 denari.
Milrea of Portugal,	1 12	"	1000 reas.		
Milrea of Madeira,	1 00	"	1000 do.		
Milrea of Azores,	83⅓	"	1000 do.		
Marc Banco of Hamburg,	35	"	16 shillings	"	12 pfennings.
Ounce of Sicily,	2 40	"	30 tari	"	20 grani.
Pound sterling of Great Britain,	4 84	"	20 shillings	"	12 pence.
Pound sterling of Jamaica,	4 84				
Pound sterling of British Provinces of Nova Scotia, New Brunswick, Newfoundland and Canada,	4 00	"	20 shillings	"	12 pence.
Pagoda of India,	1 84	"	36 fanams	"	48 jittas.
Real vellon of Spain,	5	"	34 maravedis.		
Real plate of Spain,	10	"	34 do.		
Rupee Company and British India,	44½	"	16 annas	"	12 pice.
Rix dollar (or thaler) of Prussia and the Northern States of Germany,	69	"	30 groschen	"	12 pfennings.
Rix dollar (or thaler) of Bremen,	78¾	"	72 grotes	"	5 swares.
Rix dollar (or thaler) of Berlin, Saxony and Leipsic,	69	"	30 groschen	"	12 pfennings.
Rouble, silver, of Russia,	75	"	100 kopecks.		
Specie dollar of Denmark,	1 05	"	6 marks	"	16 skillings.
Specie dollar of Norway,	1 06	"	6 do.	"	16 do.
Specie dollar of Sweden,	1 06	"	48 skillings	"	12 öre.
Tale of China,	1 48	"	10 mace	"	100 candarems.
Banco rix dollar of Sweden and Norway,	39¾				
Banco rix dollar of Denmark,	53				
Crown of Tuscany,	1 05	"	20 soldi	"	12 denari.
Guracoa guilder,	40	"	20 stivers	"	12 pfennings.
Leghorn dollar or pezzo,	90 76-100	"	20 soldi	"	12 denari.
Livre of Catalonia,	53½	"	20 sueldos	"	12 dineros.
Livré of Neufchatel,	26½	"	20 sols	"	12 deniers.
Swiss livre,	27	"	100 centimes		
Scudi of Malta,	40	"	12 tair	"	20 grani.
Scudi, Roman,	99 a 99½				
St. Gall guilder,	40 36-100	"	60 kreutzers	"	4 pfennings.
Rix dollar of Batavia,	75	"	48 stivers.		
Roman dollar,	1 05				
Rouble, paper, of Russia,		"	100 kopecks.*		
Turkish piastre,	5	"	100 aspers.		
Current mark,	28				
Florin of Prussia,	22¾				
Florin of Basle,	41				
Genoa livre,	21				
Livre tournois of France,	18½				

* Varies from 4 roubles 65 copecks to 4 roubles 84 copecks to the dollar.

TABLE OF FOREIGN WEIGHTS AND MEASURES.

Reduced to the Standard of the United States, and as received at the United States Custom Houses.

ALEXANDRIA (Egypt).

Cantaro of 100 rottoli farforo of 15 oz. (avoirdupois)	=	93½ lbs.
100 rottoli zaydino of 21½ oz.	=	133½ "
100 " zaura of 33 oz.	=	207 "
100 " mina of 26⅔ oz.	=	167 "
1 oke 400 drams of 16 carets each	=	43 "

ALICANT (Spain).

Arroba	=	27 lbs. 6 oz.
Quintal	=	109½ "

AMSTERDAM.

100 lbs. 1 centner	=	108.93 lbs.
Last of grain	=	85.25 bush.
Ahm of wine	=	41.00 gall.
Amsterdam foot	=	0.93 foot.
Antwerp foot	=	0.94 "
Rhinland foot	=	1.03 "
Amsterdam ell	=	2.26 feet.
Ell of the Hague	=	2.28 "
Ell of Brabant,	=	2.30 "
Medden or measure of coal	=	2¾ bush.

ANCONA (Italy).

100 lbs. Roman	=	102.75 Ancona.
100 " Ancona	=	73.75 lbs.

ARRAGON (Spain).

Libras of 100 lbs.	=	77.01 lbs.
Quintal, 4 arrobas of 36 lbs.	=	112.00 "

BASSORA (Persian Gulf).

Maund attary, 25 vakias tary	=	28.05 lbs.
One vakias	=	19 oz.

BATAVIA (E. Indies).

Large bahar	=	4½ peculs.
Small "	=	3 "
1 pecul	=	100 catties.
1 catty	=	16 tales.
1 pecul	=	135 lbs. 10 oz.

BERGEN (Norway).

Shippond of 20 lisponds	=	320 lbs.
Centner of 6¼ lisponds	=	100 "
Lispond	=	16 "
Waag, 3 bismar lbs.	=	36 "
1 lb., 2 marcs, 16 oz., 32 loths.		
100 Norway lbs.	=	110.23 lbs.

CHRISTIANA (Norway).

Shippond	=	352 lbs.

LAURWIG (Norway).

Shippond	=	352 lbs.

BOMBAY.

Candy	=	260 lbs.
Maund	=	28 "
Seer	=	11 1-5 oz.
Candy	=	20 maunds.
Maund	=	40 seers.
Seer	=	30 pice.

BREMEN.

Shipfund	=	2½ centners.
Centner	=	116 lbs.
Waag of iron	=	120 "
Stone of flax	=	20 lbs.
Stone of wool	=	10 "
Lispund	=	14 "
100 lbs.	=	109.8 "

CADIZ (Spain).

Quintal of 4 arrobas	=	100 lbs.
1 lb., 2 marcs, 16 oz. or 256 adarms.		
100 lbs.	=	101.43 lbs.

CAIRO (Egypt).

Cantaro, 100 rottoli	=	95 lbs.
1 rottoli	=	144 drams.
Occa	=	400 drams or 26 39 lbs.
36 occas	=	1 cantaro.

CHINA.

Tale	=	1⅓ oz.
16 tales=1 catty	=	1⅓ lbs.
100 catties=1 picul	=	133⅓ "

CONSTANTINOPLE.

Quintal	=	100 rottolis.
do.	=	45 okes.
do.	=	176 cheques.
do.	=	127 lbs.
One oke	=	2 lbs. 13 oz. 4 drams.

CALCUTTA.

Maund	=	40 seers.
Seer	=	16 chattacks.
English factory maund	=	74 lbs. 10 oz.
Seer	=	1 lb. 13 oz.
Chattack	=	1 oz.
Bengal bezar maund is 10 per cent. heavier than the factory maund.		
Bezar maund	=	82 lbs. 2 oz. 2 1-13 drams.
Seer	=	2 lbs. 13⅔ drs.
Chattack	=	2 oz. 5-6 drs.

DENMARK.

100 lbs=1 centner	=	110.28 lbs.
Barrel or toende of corn,	=	3.95 "
Viertel of wine,	=	2.04 galls.
Copenhagen or Rhineland ft.	=	1.03 foot.
Centner or 100 lbs. Denmark	=	110.28 lbs.
Shipfund=20 lispunds	=	320 lbs.
1 lispund	=	16 "
1 bismerpund	=	12 "
1 waag=3 bismerpunds	=	36 "

ENGLAND.

Old ale gallon	=	1.22 galls.
Imperial gallon	=	1.20 "
Old wine "	=	1.00 "
Quarter of grain, or 8 imperial bushels	=	8.25 "
Imperial corn bushel, or 8 imperial gallons	=	1.03 "
Old Winchester bushel	=	1.00 "
Imperial yard	=	36 inches.
Troy pound	=	144-175 of a lb. avoirdupois.
Newcastle chaldron	=	36 bush.
Stone	=	16 lbs.
Tun of wine	=	256 imp. galls.

FRANCE.

Metre	=	3.28 feet.
Decimetre (1-10th metre)	=	3.94 inches.
Velt	=	2.00 galls.
Hectolitre	=	26.42 "
Decalitre	=	2.64 "
Litre	=	2 11 pints.
Kilolitre	=	35.32 feet.
Hectolitre	=	2 84 bush.
Decalitre	=	9.08 quarts.
Milier	=	22.05 lbs.
Quintal	=	220.54 "
Killogramme	=	2.21 "
100 pounds	=	107.93 "
100 feet	=	106.60 feet.
Tun (of wine)	=	240.00 galls.

FLORENCE AND LEGHORN.

100 lbs. or 1 cantaro	=	74.86 lbs.
Moggio of grain	=	16.59 bush.
Barile of wine	=	12.04 galls.

GENOA.

100 lbs. or peso grosso	=	76.87 lbs.
100 " or peso sottile	=	68.89 "
Mina of grain	=	3.43 bush.
Mezzarola of wine	=	39.22 galls.

HAMBURG.

Last of grain	=	89.64 bush.
Ahm of wine	=	38.25 galls.
Hamburg foot	=	0.96 foot.
Ell	=	1.22 "
Shipfund, equal to 2¼ centners, or 280 lbs. Hamburg	=	299 lbs.
1 centner	=	8 lispunds, or 112 lbs. Hamburg.
1 lispund	=	14 lbs. Hamb'g
1 stone of flax	=	20 " "
1 stone of wool	=	10 " "
1 stone of feathers	=	10 " "
100 lbs. Hamburg	=	106.8 lbs.

ITALY.

100 rottoli of 31 3-7 oz. each	=	196⅛ lbs.
1 cantaro grosso	=	196⅛ "

MADRAS.

Candy	=	500 lbs.
"	=	20 maunds.
Maund	=	8 bis.
Bis	=	8 seers.

MALACCA.

Pecul	=	135 lbs.
A pecul	=	100 catties or 1600 tales.

MALTA.

100 lbs. 1 cantaro	=	174.50 lbs.
Salma of grain	=	8.22 bush.
Cantaro	=	100 rottoli.
Rottoli	=	30 oz.
1 cantaro (mercantile usage)	=	175 lbs.

NAPLES.

Cantaro grosso	=	196.50 lbs.
" picolo	=	106.00 "
Carro of grain	=	52.24 bush.
" wine	=	264.00 galls.

NETHERLANDS.

Ell	=	3.28 feet.
Mudde of Zak	=	284.00 bush.
Vat hectolitre	=	26.42 galls.
Kan litre	=	2.11 pints.
Pond killogramme	=	2.21 lbs.
100 pounds	=	108.93 "

PORTUGAL.

100 pounds	=	101.19 lbs.
22 pounds (1 arroba	=	32.00 "
4 arrobas of 32 lbs. (1 quintal)	=	1.28 "
Alquiere	=	4.75 bush.
Mojo of grain	=	23.03 "
Last of salt	=	70.00 "
Almude of wine	=	4.37 galls.

PRUSSIA.

100 lbs. of 2 Cologne marks each	=	103.11 lbs.
Quintal, of 110 lbs.	=	113.42 "
Sheffel of grain	=	1.56 bush.
Eimar of wine	=	18.14 galls.
Ell of cloth	=	2.19 feet.
Foot	=	1.03 foot.

ROME.

Rubbio of grain	=	8.36 bush.
Barile of wine	=	15.31 galls.
100 Roman lbs.	=	74.77 lbs.

RUSSIA.

100 lbs. of 32 loths each	=	90.26 lbs.
Chertwert of grain	=	5.95 bush.
Vedro of wine	=	3.25 galls.
Petersburg foot	=	1.18 foot.
Moscow foot	=	1.10 "
Pood	=	36.00 lbs.

SICILY.

Cantaro grosso	=	192.50 lbs.
" sottile	=	175 lbs.
100 pounds	=	70 "
Salma grossa of grain	=	9.77 bush.
" generale	=	7.85 "
" of wine	=	23.06 galls.

SPAIN.

Quintal, or 4 arrobas	=	101.44 lbs.
Arroba	=	25.36 "
" of wine	=	4.43 galls.
Fanega of grain	=	1.60 bush.

ST. GALL.

100 heavy lbs.	=	128 lbs.
100 light "	=	102 "

SURAT.

20 Surat maunds, or 10 Bengal factory maunds	=	1 candy.
1 candy	=	746 lbs. 10 oz.

SWEDEN.

100 lbs. or 5 lispunds	=	73.76 lbs.
Kan of corn	=	7.42 bush.
Last	=	75.00 "
Cann of wine	=	69.09 galls.
Ell of cloth	=	1.95 foot.
20 commercial lbs.	=	1 lispund.
20 lispunds	=	1 skeppund.

SMYRNA.

100 lbs. (1 quintal)	=	129.48 lbs.
Oke	=	2.83 "
Quillot of grain	=	1.46 bush.
Quillot of wine	=	13.50 galls.

TRIESTE.

100 pounds	=	123 60 lbs.
Stajo of grain	=	2.34 bush.
Orna or eimer of wine	=	14.94 galls.
Ell for woolens	=	2.22 feet.
Ell for silk	=	2.10 "

VENICE.

100 lbs. peso grosso	=	105.18 lbs.
100 " " sottile	=	66.04 "
Moggio of grain	=	9.08 bush.
Anifora of wine	=	137.00 galls.

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